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July Output Drops For Ammonia, Other Inorganic Products

Commerce Department
Gives Preliminary
Figures on Five Items

WASHINGTON—Production of a number of inorganic chemicals including anhydrous ammonia, ammonium nitrate, nitric and phosphoric acids, and sulfuric acid in the month of July, 1959, was slightly lower than production tallied in the month previous, according to a report just issued by the U.S. Department of Commerce.

Here are some of the figures released Sept. 15:

Anhydrous ammonia output in July, 1959, was 366,509 tons. The month before, it was 386,755. (Croplife, Sept. 14, page 1.)

Ammonium nitrate production in July was 216,296 tons, compared to 217,172 tons in June.

Production of nitric acid was the only chemical associated with the fertilizer industry to rise in July. The figure for that month was 233,412 tons, as compared to 233,005 tons for June.

Phosphoric acid output in July was 140,312 tons; for June, 147,918 tons.

Output of sulfuric acid (100% H₂SO₄) in July was 1,365,098 tons as compared to 1,469,489 tons for June.

These figures were compiled by the Bureau of the Census, U.S. Department of Commerce and are tabbed as being preliminary.

NPFI Announces Dates Of Convention in 1960

WASHINGTON — The National Plant Food Institute has announced that its annual meeting will be held June 13-18, 1960, at the Greenbrier Hotel, White Sulphur Springs, W. Va.

Names of speakers and other details of the meeting will be announced as convention plans develop, according to Louis H. Wilson, director of information for the Institute.

Mississippi Survey Shows Shifts in User Preferences

MEMPHIS—A survey of manufacturers and dealers in the Mississippi Delta shows several marked changes in agricultural chemical sales. These changes are creating both opportunities and headaches for the trade.

The most striking change appears to be a preference for liquid insecticides over solids. Two manufacturers said that four or five years ago, 90% of their production was in solid insecticide and only 10% liquid. This year these percentages are almost exactly reversed.

One dealer reported a big swing to liquid insecticides this year with his sales running about 75% liquid and

Fertilizer Salesmen Study Good Practices at N. Carolina School



FERTILIZER SCHOOL SPEAKERS—The North Carolina fertilizer salesmen's school, held recently at Raleigh, attracted some 254 registrants comprising plant food salesmen from a wide area of the South. Three of the speakers at the school are pictured above. They are A. P. Gates, general sales manager, Virginia-Carolina Chemical Corp., Richmond, Va., at left; E. Y. Floyd, director of the Plant Food Institute of North Carolina and Virginia, Inc.; and Ralph Everett, management consultant of Empire Sales Training, Inc., Miami, Fla.

Controlling Pests in Earlier Years Keeps Mormon Cricket Numbers Low During 1959

FORT COLLINS, COL.—Effective control in earlier years is credited with keeping two of Colorado's insect pests, grasshoppers and Mormon crickets, well in hand during 1959.

Pest control officers of the U.S. Department of Agriculture believe last year's cooperative program against grasshoppers is largely responsible for the relatively minor hopper infestation this year.

Some 5 million acres in 11 Western States were covered last year in the

grasshopper campaign. Most work was in Colorado, Kansas, New Mexico, Oklahoma and Texas, and of these states, only New Mexico required a cooperative control program this year.

In Colorado, where almost 3 million acres were treated in 1958, infestations were at a minimum this year.

Damage by Mormon crickets which, since pioneer times, have periodically devastated crops and ranges in the West, has been held down for several years. The reason, USDA says, is that breeding areas of these pests have been treated.

Since 1952, pest control workers have surveyed the rough mountain

(Turn to CRICKET, page 17)

RALEIGH, N.C.—A complete educational program to help fertilizer salesmen work with more efficiency and know-how was presented Sept. 3-4 at North Carolina State College, Raleigh. Some 254 salesmen registered and heard potent discussions covering the nature of customers, the mark of a good salesman, why a farmer should purchase and use fertilizer, and how to close a sale by bringing the customer and product together. Additional topics included use of agronomic selling tools, and the importance of good public relations.

The school, first of its type to be held in North Carolina, resulted by joint planning on the part of the State College and the fertilizer industry. A planning committee, under the direction of J. M. Curtis and W. C. White, comprised the following: W. M. Atkinson, assistant sales manager, Virginia-Carolina Chemical Corp.; L. Y. Ballentine, commissioner of the North Carolina Department of Agriculture, Raleigh; C. E. Bishop, head, department of agricultural economics at North Carolina State College; J. W. Fitts, head, department of soils at North Carolina State; E. Y.

(Turn to SCHOOL, page 8)

Cotton Weeds, Insects Discussed at Meeting

AUBURN, ALA. — Controlling insects and weeds in irrigated cotton received attention of farmers and county agents attending the recent cotton irrigation short course at the Alabama Polytechnic Institute Agricultural Experiment Station.

In a discussion of chemical weed control, V. S. Searcy, assistant agronomist, pointed out that use of herbicides is the same for irrigated as non-irrigated cotton. This is true, he explained, because most cotton in Alabama is not irrigated until June or later.

Mr. Searcy emphasized the importance of planting cotton on the level or slight grades so that the pre-emergence chemical weed killers will not be concentrated close to the seed in case of heavy rain shortly after planting. He said this is more important on sandy soil, since leaching is worse than on heavy soils.

Herbicide oil is the only material recommended for controlling weeds in cotton after it comes up, Mr. Searcy said. He said it must not be applied closer than five-day intervals and no more than three applications can be used.

An especially good insect control program is a must when cotton is irrigated, Walter H. Grims, extension survey entomologist, declared. He said the higher the yield potential, the more farmers stand to lose by not carrying out an effective insect control program. He cited results of studies at the Mississippi Agricultural Experiment Station where irrigation without insect control actually lowered yields.

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NPFI, Southeastern Colleges Agree On Forest Projects

WASHINGTON—Two more agreements have been entered into by the National Plant Food Institute with colleges in the southeastern region of the U.S. to help partially finance research projects on forest tree fertilization, it was announced recently by L. C. Walker, southeastern regional forester of the NPFI.

One agreement is with the School of Forestry, Raleigh, and provides for a grant-in-aid of \$800 to be used in greenhouse and field experiments. These studies will be set up to determine whether applications of fertilizers will produce stimulation in the growth of planted seedlings on organic soils. The species used will include loblolly, slash and pond pine and bald cypress. Field studies will be carried out on the Hofmann Pocosin in Onslow County, N.C. Greenhouse studies will be conducted at the school of forestry. In both studies, growth responses to various combinations of plant nutrients will be measured. The investigation will be under the supervision of Dr. T. E. Maki, head of the department of forest management.

The agreement covers a period of one year, but if deemed desirable it may be extended.

The second agreement is with the Georgia Coastal Plain Experiment Station of the University of Georgia. A grant of \$500 was made to finance partially an investigation of the effect of water supply and nutrient applications on survival and growth of loblolly and slash pine seedlings. The research is to be undertaken by the division of agronomy (soils) at the Southeastern Tidewater Experiment Station at Fleming, Ga., with Messrs. G. N. Sparrow, Joe M. Daniels, A. E. Royer, ARS, USDA, and Dr. L. C. Walker, University of Georgia, participating. This experiment is cooperative between the Soil and Water Conservation Research Division of the Agricultural Research Service, USDA, the school of forestry, University of Georgia, Georgia agricultural experiment stations and NPFI and is for a period of three years.

The investigation is to be conducted on Bladen clay loam or other selected soils of the Southeastern Tidewater Experiment Station with a minimum of 36 plots prepared for the study. Records of stand count and tree height will be made at regular intervals from April 15 through Dec. 31 each year.

English-Dutch Interests Expand Canadian Facilities

MONTREAL, QUE. — English-Dutch fertilizer interests with worldwide operations are continuing their expansion in Canada.

Fisons, Ltd., England, and Albatros Superfosfaatfabrieken, N.V., Holland, who already own International Fertilizers, Ltd. (with plants at Saint John, N.B. and Wolf's Cove, Que.) have now acquired Hy-Trous Co. of Canada, a family-owned, Cornwall, Ont., fertilizer maker.

A new company, Hy-Trous Co. of Canada 1959 Ltd., has been formed to take over the business.

A. Lambert, president of International, is also president of Hy-Trous 1959 Ltd. General manager of the latter company is J. L. Garey.

Company officials said a \$150,000 modernization and expansion program is under way at Cornwall. The plant is being enlarged and re-equipped. Granulating machinery is being added.

Employment is expected to rise from about 12 now to 20 to 25 within a few months.

The company sells fertilizers under the "Hy-Min" trademark in eastern Ontario, southern Quebec and northern New York state. It hopes to enlarge its markets in the near future.

Monsanto Announces Construction Plans For New \$10 Million Research Center

ST. LOUIS—Contracts have been awarded for a Monsanto Chemical Co. research center here, which will cost more than \$10 million. The buildings comprising the center will be erected along Warson Road, south of Olive Street Road, in Creve Coeur, St. Louis County. (See Croplife, Sept. 14, page 19.)

Work began on the site shortly after Monsanto's president, Charles Allen Thomas, announced the company's plans.

Fruin-Colnon Contracting Co. of St. Louis has been awarded the contract for site preparation and construction of subsidiary buildings. The principal laboratory buildings will be constructed by William H. and Nelson Cunliff Co., St. Louis.

With completion of the first phase scheduled for 1961, the research center is planned to allow for further expansion, which may occur over a period as long as 15 years.

"There are many benefits to be gained in having our research people in close proximity to our administrative headquarters," Mr. Thomas said in announcing the project. "In addition, there is the important intellectual stimulus which may be found in a group working together rather than at separate locations."

On completion, all buildings in the

new center will be connected with each other and with the present administrative offices by means of pedestrian tunnels and covered bridgways. The new buildings will incorporate many plastic materials in their construction, based on Monsanto's experience with its Inorganic Research Laboratory at Creve Coeur, wherein the building itself is a continuing research study into the uses and benefits of plastics as construction materials.

Over 190,000 cu. yd. of earth will be moved in preliminary grading operations for the buildings and parking lots.

Laboratories in the research center will be built on a newly developed modular basis, providing extreme flexibility for the many and varied laboratory setups required by modern research.

Ohio Asked to Spray County for Japanese Beetle

TOLEDO, OHIO—The Ohio Department of Agriculture will consider the Michigan Department of Agriculture's request that Ohio spray Lucas County's northern border to stop the spread of Japanese beetle into Michigan, said Robert H. Terhune, director. Charles Figy, an assistant to Ezra Taft Benson, secretary of agriculture, said the federal government would participate in such a project.

The spray program could get under way this fall, officials said.

George S. McIntyre, director of the Michigan Department of Agriculture, said the Monroe County, Mich., board of supervisors has agreed to have the 15,000 affected areas in Monroe County sprayed, at a cost of some \$45,000 to the county.

DAMAGE LIGHT

SALT LAKE CITY—Disease and weather damage to Utah's sugar beets and potatoes have been light and both crops are expected to be average, according to the current state and federal agencies report. The state's peach and pear crops are expected to be below normal.



Edgar W. Sawyer, Jr.

SPEAKER—Edgar W. Sawyer, Jr., research supervisor for Minerals & Chemicals Corp. of America, Menlo Park, N.J., will speak on the subject "The Stabilization of Liquid Fertilizers With Attagel 30" at the 1959 convention of the National Fertilizer Solutions Assn., being held Nov. 8-10, 1959, at the Statler Hilton Hotel in St. Louis, Mo. Mr. Sawyer graduated from the University of Pennsylvania in 1951 with a B.S. degree in chemistry, and has continued his studies toward a master's degree in chemistry at the University of Delaware.

Central Farmers Plant Dedicated in Idaho

GEORGETOWN, IDAHO — The new Idaho phosphate plant of Central Farmers Fertilizer Co., a \$16 million venture, was dedicated Sept. 10 with top CFF and Idaho officials attending.

Some 300 guests toured the new facility, including Idaho's Gov. Robert E. Smylie and Avery L. Stutts, general manager of the Idaho phosphate works. Other top management representatives on hand included Robert Johnson, personnel manager, and Dean Larsen, office manager.

The Central Farmers Fertilizer plant is the only such facility west of the Mississippi producing triple-phosphate by producing its own elemental phosphorus for use in acidulation of phosphate products, the company said.

The ore is stripped from an 8,100-ft. level, then put on a conveyor system and transported to the plant storage area two miles distant. Ore is separated by the conveyor according to grade and quality for stockpiling. The novel conveyor also generates electricity to run itself.

Stockpiling is largely confined to the spring, summer and fall months, since winter curtails mining operations. The stockpiled ore tides the plant over during the winter. About 726,000 tons of ore currently are stockpiled.

The plant itself upgrades, nodulizes and mixes the ore with coke and silica to form the burden for the furnace.

Applicator Killed When Plane Crashes

MEMPHIS, TENN. — A 34-year-old aerial applicator was killed near here when his plane crashed and burned in a wooded area. William Peterson had just made a pass over a cotton field when his PA-18 smashed into the trees.

Another pilot dusting the same field said Mr. Peterson's plane hit one of three small trees in the field and that the pilot pulled up to try for an emergency landing on the other side of the wooded area but failed to make it.

Mr. Peterson flew for Farmers Aero Corp., West Memphis, Ark. It was the company's first fatality.

U.S. Potash Names Public Relations Director

LOS ANGELES—Nicholas J. Kockler, former assistant industrial relations director of the U.S. Potash Co. division of U.S. Borax & Chemical Corp., has been named corporate director of public relations of U.S. Borax with headquarters in Los Angeles, announced James M. Gerstley, president.

A native of Minnesota, Mr. Kockler was graduated from New Mexico Western College in 1946. Following graduate work at Stanford and the University of Minnesota, he joined the industrial relations staff of U.S. Potash Co. as an industrial publications editor and was promoted to assistant industrial relations director in 1955.



E. W. Ogle

Bill Crutcher

Frans Sunitsch

Willis Ryder

Van Waters & Rogers Announces Changes

SEATTLE, WASH.—Six transfers and appointments in the Pacific Northwest area of Van Waters & Rogers, Inc., went into effect Sept. 1, according to Tom W. Moore, vice president.

Willis Ryder, who has represented the firm's agricultural supply department in central Washington for the past three years, was transferred to the company's San Francisco office.

Bill Crutcher, Spokane salesman, will cover the Columbia Basin area and north into Wenatchee and Lake Chelan, formerly a part of Mr. Ryder's territory.

Franz Sunitsch, newly appointed Seattle salesman, will cover the Yakima Valley area and the Walla Walla, Pendleton and Hermiston sales district formerly serviced by Dale Webber of the Portland office.

Dale Webber has been transferred to the company's Boise office to cov-



Bob Zenger

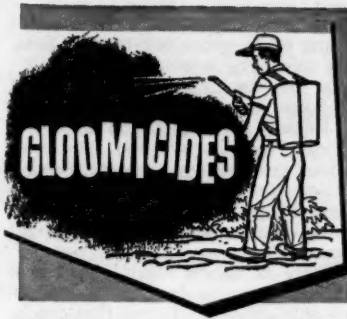
Dale Webber

er the Boise Valley area and parts of eastern Oregon.

The Seattle office will also turn over the Goldendale area of south central Washington to Portland. It will be added to the territory covered by Bob Zenger.

Eugene W. Ogle was appointed Spokane manager for the agricultural supply department.

Van Waters & Rogers, Inc., distributes agricultural chemicals, fertilizers, feed additives, animal health products, binder and baler twine and wire.



"What is your profession?"
 "Agricultural expert."
 "What was your father?"
 "A farmer."
 "And your grandfather?"
 "A peasant."

★

Missile scientist at Cape Canaveral, to associate: "Just imagine, eight years at M.I.T. and all I do is stand here and count backwards from ten!"

★

Farmer Brown: "Well, how did your potato crop turn out?"

Farmer Green: "Splendid. Some as big as marbles, some as big as peas, and, of course, there were a lot of little ones."

★

In the Alps, McAndrew hired a taxi at the station to get to the hotel. On the way, the taxi skidded downhill and the driver yelled, "My brakes are gone. I can't stop the car."

McAndrew, terribly excited, replied, "At any rate, Mon, stop the meter."

★

"I see you are driving a new car," said a policy-holder enviously.

"Yes," said the insurance salesman, "I tried to sell an insurance policy to an automobile salesman."

★

Lawyer: "You say you want to get a divorce on the grounds that your husband is careless about his appearance?"

Client: "Yes, he hasn't shown up in nearly two years."

★

Gal: "I'll die if you don't kiss me."

Boy: "This is terrible. I'm being torn between Love and Duty."

Gal: "What do you mean, dear?"

Boy: "I'm in the undertaking business."

★

After the doctor checked the patient over, the physician asked, "Have you been living a normal life?"

"Yes, doctor."

"Well, you'll have to cut it out for a while."

★

They were walking along the city street late at night when all of a sudden it began to pour. As they looked for shelter they noticed that most of the shops were closed. But the wife spotted a neon sign and an open door below it, and they rushed towards it.

When they got there the husband saw that it was an expensive night club and hesitated before going in.

"What's the matter?" said the wife.

"I was just thinking whether it was better to stay outside and get wet," he replied, "or go inside and get soaked."

★

A Broadway character was complaining the other evening, "Since I lost my last cent, half my friends no longer speak to me."

He was asked, "How about the other half?"

"They," was the reply, "don't know it yet."

St. Regis to Operate Chemical Packaging Firm to Supply Eastern Fertilizer Trade

NEW YORK—St. Regis Paper Co. has announced that Chemical Packaging Corp., recently acquired through an exchange of stock, will be operated as a subsidiary specializing in the sale of multiwall bags and packaging equipment to the fertilizer industry east of the Mississippi River.

Richard Heard, president of Chemical Packaging Corp., will continue in that capacity, to assure continuity of operations while assisting in the smooth merger of the packaging group into St. Regis. In this regard, Mr. Heard will work directly with Bernard W. Recknagel, vice president and general manager of the St. Regis flexible packaging products sales division.

Donald F. Stewart, vice president

and treasurer of Chemical Packaging Corp., will continue his present responsibilities, including financial and accounting affairs for the corporation.

The Savannah, Ga., and Louisville, Ky., plants of Chemical Packaging Corp. will become a part of the St. Regis Eastern bag plant group.

Sales of Chemical Packaging Corp. will be under the overall direction of Charles A. Woodcock, director of Eastern operations, flexible packaging products sales division. William S. Doolan, sales manager of Chemical Packaging Corp., will work directly with Mr. Woodcock to maintain the specialized attention given to fertilizer bag customers and coordinate with regional offices of the Eastern area sales group of the flexible packaging sales division.

Pacific Cooperatives Establish New Branch

HILLSBORO, ORE.—Pacific Cooperatives has announced establishment of a new local cooperative association here to provide for continuation of Pacific services to Washington County agriculture.

The co-op advises that it has established temporary headquarters at Imperial Feed warehouse, 550 S. Second St.

Tualatin Valley Cooperative, Hillsboro, was formerly one of the 120 Pacific Cooperatives. It was recently acquired by Western Farmers Cooperative, Seattle.

Peter Kirk, president of the board of directors of Farmers Oil Co., Mt. Angel, has been named interim manager until the cooperative is fully organized and a permanent manager chosen.

Others on the staff will be Walt McCoy and Rolly Turner.

Speed handling, reduce pile set with Du Pont URAMON[®] Ammonia Liquors

You can keep production fast-moving and your fertilizer free-flowing with the added conditioning benefits of Du Pont "Uramon" Ammonia Liquors.

UAL helps to prevent the cementing, pile-setting action that often results from some other nitrogen formulations. As mixtures ammoniated with UAL cool, residual moisture combines with the compounds formed—leaving a dry mix remarkably free of excessive caking, segregation and dusting. Result—your UAL goods suffer less pile set, seldom require blasting and can be moved readily by the payload.

In addition, Du Pont "Uramon" Ammonia Liquors are non-corrosive, can be used in ordinary steel equipment. Secondary set and caking in the bags are also minimized because the urea from UAL is non-reactive with other fertilizer ingredients. And UAL mixtures are highly drillable.

After application, the extra fertilizing bene-

fits of UAL begin. UAL provides nitrogen in both the urea and ammonium form—nitrogen that becomes available at a rate closely paralleling plant requirements. Nitrogen from Du Pont UAL is also leach-resistant; remains in the root zone long after other forms have been exhausted.

Du Pont UAL is available in five forms, including UAL-37 for even more gradual nitrogen release, and UAL-S with the added conditioning effects of ammonium sulfate. For information on which type is best suited to your needs, write Du Pont.

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Industrial and Biochemical Department

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

INSECT, PLANT DISEASE NOTES

Yuma, Arizona, Fights Citrus Tree Diseases

YUMA, ARIZ.—Efforts have been renewed by citrus growers in the area to safeguard their trees from disease and insects harbored by trees in Yuma yards, it was reported.

The growers have been working for the past year with state entomologists on the eradication of the Meyer or Chinese lemon tree, a known host of the tristeza virus which causes disease in citrus.

The Yuma-Mesa Citrus Club has asked the help of Yuma County legislators and the farm bureau in getting a complete survey of the city of Yuma to find Meyer lemon trees and also possible infestations of red scale or black scale, dangerous citrus insects.

Some 100 Meyer lemon trees have been destroyed by agricultural inspectors and replaced by the citrus club, but it is estimated that only about half of the dangerous trees have been destroyed.

C. D. Brame, entomologist with the Arizona Commission of Agriculture and Horticulture here, said a house-to-house inspection will be necessary to eradicate all the trees. The tree is under quarantine and growing or selling the variety is forbidden.



Curly Top Virus Found in Colorado Fields

FT. COLLINS, COLO.—The Colorado Insect Detection Committee currently reports incidence of curly top virus in tomatoes in some fields in the Arkansas Valley is running as high as 30%.

Widespread in tomato fields in Prowers, Bent, Otero and Pueblo counties, the disease is transmitted by sugar beet leafhoppers. The committee noted symptoms are also appearing in some sugar beet fields.

In 1958 western Colorado counties suffered heavy losses from curly top but so far this year, damage has been confined to the Arkansas Valley.

Aphid numbers are continuing to increase in late plantings of potatoes in Weld County. No new infestations, however, have been found of the spotted alfalfa aphid in northeastern counties.

Populations of the corn leaf aphid are well distributed through northeastern Colorado, though counts are low.

Light trap collections of aster leafhoppers are still high in the Rocky Ford area of Otero County and around Greeley in Weld. But incidence of the disease it carries, aster yellows, is low in potatoes, carrots, celery and other plants.

However, a marked decrease in insect activity has been noted with the advent of fall, the committee reported.

Grasshoppers were still being found in at least nine eastern Colorado counties. But rangeland counts were mostly down to from one to five per sq. yd., with only scattered instances where as many as 10 to 30 per sq. yd. were found. In the same counties, the count on cropland and around field borders ran generally higher at from five to ten hoppers per sq. yd.

The spotted alfalfa aphid was relatively inactive except in Yuma County where up to 10,000 per 100 sweeps were found. This is the first time that

aphid has been reported from that area. In Sedgwick County, the count ran only 50 per 100 sweeps.

Corn fields in four eastern Colorado counties show some damage to ears due to corn earworm. Highest count was in Kit Carson County where 70 per 100 ears were found. The Yuma County count was 40 per 100 ears while 30 per 100 ears was the figure for both Sedgwick and Phillips counties.

In Weld County potato fields, the potato psyllid count was light for both adult and larval stages. Aphid activity, on the other hand, was moderately heavy.

On the Western Slope, the peach harvest has been completed, with main damage from the peach twig borer ranging from 1 to 5%.

Light trap counts showed the heaviest infestation of the six-spotted leafhopper in Otero County near Rocky Ford. Rocky Ford also had the highest incidence of corn earworm moths. In both cases, however, the infestation was light compared with earlier counts.

Face Fly Bothers Cattle in Illinois

URBANA, ILL.—A new pest, "face fly," is pestering both dairy and beef cattle for the first time in Illinois.

Face flies are persistent and annoy cattle greatly, even though they do not suck blood, observes Steve Moore, extension entomologist with the University of Illinois College of Agriculture and Illinois Natural History Survey.

Animals infested with face flies bunch up, twitch their ears and shake and rub their heads. Often the animals' eyes will water excessively. It is suspected that these flies may spread pinkeye. In addition, they cause a reduction in milk and butterfat production.

Mr. Moore says that the face fly was first reported on the North American continent in Nova Scotia, Canada, in 1952. It came originally from Europe or Asia. Although the flies haven't been positively identified in southern Illinois, they are present in the northern two-thirds of the state.

So far, little is known about how to control these flies. But Mr. Moore believes that any attempt at controlling them should include both on-animal and off-animal treatment.

Rain, Cool Weather, Boll Weevils Face Mid-South Farmers at Harvest Time

MEMPHIS, TENN.—Three obstacles—rains, cool weather, and insects—faced Mid-South farmers during the middle of September in their efforts to harvest crops. Boll weevils continued to attack the top crop on younger cotton, and boll rot was reported in many areas because of excess rain.

Insects threatening the crop in Arkansas include boll worms, moths, aphids, spider mites and leaf worms. Fall armyworms were reported damaging a few fields of small grains. Cotton defoliation was on the increase to speed up cotton picking and to prevent boll rot. Harvest of early rice was getting under way with good yields reported.

Although the cotton crop still looked good generally, insects, boll rot and almost continuous showers were beginning to take their toll in Missis-

White-Fringed Beetle Appears in Arkansas

LITTLE ROCK, ARK.—The white-fringed beetle has been found in Arkansas for the first time, the U.S. Department of Agriculture reports.

A plant pest survey by USDA's Agricultural Research Service turned up two white-fringed beetles near Forrest City, Ark., during the summer. The two beetles were found 46 miles west of the nearest previously known infestation, at Memphis, Tenn. Areas around the find have been treated with insecticide, and surveys are continuing to determine if other infestations exist.

This insect, first reported in the U.S. in Florida in 1936, has since infested parts of Alabama, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee. Cooperative state-federal efforts involving survey, quarantine, and control have kept most infestations at a low level, retarded spread, and prevented extensive crop damage.

A native of South America, the beetle is more destructive in this country than in its native land. Adult beetles—all of them wingless females—feed on plants above ground. A single adult may lay more than 1,500 eggs, which develop into larvae that feed on roots and underground plant stems. The pest attacks almost all the field and garden crops of economic importance, and many ornamental plants. It also can maintain a high population on native plants, when no cultivated crop is present.

Grubs or adults feed on at least 385 species of plants, including such crops as cotton, corn, soybeans, velvetbeans, peanuts, potatoes, sweet potatoes, tobacco, strawberries, kudzu, lespedeza, lupine, oats, and on the roots of peach, pecan and tung trees.

In the past year—ending June 30—ARS, states, and land owners cooperated to treat 117,000 infested acres with insecticides. Beetles were found newly infesting 59,000 acres in the same period. Nurseries, railroad yards, and loading points are focal points of treatment.

Angular Leaf Spot Damages Texas Cotton

LAMESA, TEXAS—Angular leaf spot has caused more damage this year than ever before in the South Plains cotton belt. This fungus disease

has been around for several years, but seems to be spreading to new fields and increasing in severity.

In Dawson County alone the leaf spot has reduced this year's yield by at least 10 to 15 thousand bales.

"And that doesn't tell the whole story," said DeLacy Frampton, assistant county agent. "There will be another 30,000 bales which will be sold at a lower price because of blight damage."

There is no chemical known that will eradicate the disease, Mr. Frampton says, or at least none that can be applied economically enough. The only solution lies in developing blight resistant varieties. Several such varieties have been developed in recent years but their immunity seems to disappear after two or three crops.

Another blight, verticillium wilt, has also taken a toll of cotton this year, but it is not so prevalent or damaging as the angular leaf spot.



Michigan County Battles Japanese Beetle Outbreak

KALAMAZOO, MICH.—War has been declared in southwestern Michigan with finances being mustered for purchase of insecticides to repel the Japanese beetle.

An estimated 4,800 acres of land near Sawyer is under attack by the rapidly multiplying small beetle which has an insatiable appetite for fruit, a chief product of area growers.

The Berrien County supervisors agricultural committee is on record urging immediate action to wipe out the infestation.

Besides threatening the area's fruit industry, the beetle attack could bring a quarantine of the Benton Harbor market. Every load clearing the market for distribution would be delayed.

Nate Brant, Bainbridge Township supervisor, who heads the agricultural committee, says treatment of the infested areas has been estimated roughly at a cost of \$3 an acre for a total of about \$14,000.

Mr. Brant's group is meeting with the finance committee to start movement toward obtaining bids from insect fighters. The board of supervisors must give final approval.

Dean Lovitt, agriculture plant industry executive, told the committee best results in the beetle war would be obtained by a spray of affected areas in the fall. State and federal agricultural agencies provide manpower to distribute material provided by local governmental units.

Bollworm Causes Damage As Arizona Cotton Matures

PHOENIX, ARIZ.—During the week cotton in many fields started to mature, while in others the plants were fruiting nicely. Picking is in progress in most parts of the state. The cotton bollworm is causing the greatest injury at the present time. Farmers should watch very closely for eggs and small worms and control when they find damage by small worms. The cotton leaf perforator continues to injure the edges of some fields in a few instances and in skip-row cotton.

Maricopa County: It was reported that bollworm damage was very heavy in many fields. Another generation of bollworms should be showing anytime and growers should watch their fields very closely. Controls will pay big dividends. Salt Marsh caterpillar adults abundant in many fields. Some controls may be needed. Most larvae are still in the cluster stage. Lygus injured squares are still prevalent in many fields and controls still might pay in some areas. Cabbage loopers are on the increase in some fields, but diseases are keeping the counts low.

Pinal County: Bollworms were found causing injury in many fields. Controls were needed in most infested fields. Cotton leaf perforators were causing injury to edges of many fields. Some fields need controls, especially where skip-row cotton is present. Lygus still prevalent in some fields. A new hatch of beet armyworms was appearing in the Casa Grande area.

Pima, Graham and Cochise Counties: The bollworm was found causing the greatest injury in these counties.

Yuma County: It was reported that bollworms, lygus and cotton leaf perforators were causing the greatest injury.—J. N. Roney.



Hessian Fly Causes Some Severe Losses in Iowa

Scattered severe losses from Hessian fly damage in winter wheat were seen in Iowa this summer. These losses seemed to be worse in western Iowa where wheat was planted ahead of the safe-seeding date last fall.

Recent rains and cooler temperatures favor emergence and survival of adult Hessian flies.

Grasshoppers are working in new alfalfa seedings and in the edges of soybeans.

Stored grain insects are being reported from all parts of Iowa. Corn in farm storage and some warehouse corn show moderate to heavy infestations of red flour beetles, sawtooth grain beetles and fungus beetles. In the warehoused corn, ventilation had not been carried out.

A new fly pest of cattle has apparently appeared on the Iowa scene. Reports of cattlemen indicate this fly's presence, although collections have not verified this. Its name is the cattle face fly, *Musca autumnalis* (De G.) A close relative of the housefly, it is bigger than the housefly. It feeds on the mucous secretions, particularly around eyes and nostrils of cattle and horses.—Harold Gunderson.

Velvetbean Caterpillar Infests Georgia Soybeans

ATHENS, GA.—Velvetbean caterpillar infestations, ranging from moderate to heavy, were found on soybeans in Warren, Jefferson, Burke, Jenkins, Bulloch, Sumter, Macon and Peach counties.

The caterpillars were also found heavy on peanuts in Jenkins, Bulloch, Coffee, Colquitt and Sumter counties.

Moderate to heavy infestations of sorghum webworm were noted on millet and grain sorghum in Jefferson, Jenkins, Bulloch, Colquitt and Sumter counties.

Grain sorghum was being infested moderately by fall armyworms in Jefferson, Burke, Jenkins, Bulloch and Sumter counties.

Corn earworms were found on grain sorghum in Jefferson, Jenkins, Bulloch, Sumter and Peach counties.

Heavy infestations of cotton leafworm were found on cotton in Wayne and Appling counties.—W. C. Johnson.

Boll Weevil Continues Migration in Tennessee

KNOXVILLE, TENN.—Boll weevils were continuing their migration to the north but were moving a good deal slower than they did last year. Where blooms can be found in the southern counties, as many as ten boll weevils could be found in a single bloom. Some fields are past the damage stage but others are losing some cotton in the middle and top crop due to boll punctures. In fields where there are a large number of bolls that will still have time to mature, controls should be continued. In most fields, airplane dusting and spraying is the only answer since cotton is so rank.

Bollworms continued to increase and were causing considerable damage all

over the cotton growing area. All sizes of worms could be found. Close observations should be made in all fields in order to time controls to prevent damage. These worms must be controlled when very small. Once they get inside the bolls, control is almost impossible.

Aphids were present in a large number of fields and will probably increase. It should be kept in mind that the honeydew secreted from the aphids can stain the lint.—R. P. Mullett.

Cut Worms, Grub Worms Harming Texas Lawns

BIG SPRING, TEXAS—Cut worms and white grub worms are damaging many lawns in west Texas. Bermuda grass, which has always been considered too hardy for any insect, is being killed out completely in some areas.

SURVEY

(Continued from page 1)

this year and predicted that future sales will be greater still. "The only poor results we had from pre-emerge in our area," one said, "was when a farmer did a poor job of seedbed preparation or a sloppy application job." Almost every dealer reported spending many hours this spring calibrating spray rigs and supervising pre-emergence applications.

Several dealers recorded increased interest and sales in lay-by herbicides and indicated they expect this to become a larger sales item in future seasons.

Liquid nitrogen is another fast-rising product for most farm supply stores in this area. One predicted that liquid nitrogen soon will replace solids in his area. In addition to several large storage tanks this dealer purchased 22 application rigs and closely supervises application. "We won't let a rig start unless one of our men is on hand to be sure the job is done properly," he said. "If we can get the farmer started right in applying liquid nitrogen we are confident he will get the results he expects."

The dealers surveyed were unanimous in citing the growth of garden supply product sales. Without exception each one reported a continuing increase in sales in this department. They cited such things as community development programs, generally increased interest in home beautification both in towns and in rural areas, and more leisure time for the farm family because of increased mechanization. All said they planned expansion and intensified promotion of their garden supply department.

The greater number of new products is causing more work for dealers as well as resulting in greater sales. "Look at our main lines today," one central Delta dealer said, "and compare them with those of five years ago. In an increasing number of cases we are selling entirely different chemicals. We have to keep up with these changes if we are to serve the farmer to our mutual benefit."

Another dealer in the northern section of the Delta has resorted to direct mail to brief customers on new products. Each time he takes on a new line he sends descriptive literature on the new product to every potential customer.

Named Manager

SALT LAKE CITY, UTAH—Dr. Elton Soltes, who has headed potash developments in southeastern Utah for Delhi-Taylor Oil Corp., Dallas, has been named manager for special projects and planning division of the firm.

He succeeds J. W. Bartlett, retiring vice president, and will make his headquarters in Dallas, reporting directly to J. L. Sewell, president of the firm.

West Virginia Pulp Reports Sharp Rise in Earnings, Sales

NEW YORK—West Virginia Pulp & Paper Co. has reported record sales for the three months ended July 31 and third quarter earnings from operations 50% above the same period of last year.

David L. Luke, president, said the company's third quarter earnings from operations amounted to \$3,207,000, equal to 61¢ a share, compared with \$2,137,000, or 39¢ a share, for the corresponding period in 1958.

For the first nine months of this year the company reported earnings from operations of \$8,682,000, equal to \$1.63 a share, compared with \$6,820,000, or \$1.26 a share, for the same period in 1958, an increase of 27%.

The third quarter results were achieved on sales of \$58,956,000, the highest recorded in any previous quarter of the company's history. The quarter brought net sales for the first nine months of 1959 to \$171,670,000,

an increase of 14% over sales of \$150,263,000 for the first nine months of the previous year.

In addition to earnings from operations, Mr. Luke reported a gain of \$11,775,000, equal to an additional \$2.29 a share, on the company's sale last June of its majority stock interest in the Hinde and Dauch Paper Co. of Canada, Ltd., to the St. Lawrence Corp., Ltd., of Montreal.

Mr. Luke attributed the company's improved third quarter performance to a strong demand for its paper and paperboard, converted paper products, chemicals and wood products, which enabled the mills to operate at more than 90% of capacity. He said all segments of the company's business were running well ahead of last year, reflecting continuing improvement in the general economy.

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EXPERTS SET DOWN RULES . . .

How Businessman Can Deduct Bad Debts from Income Tax Payments

EVERY BUSINESSMAN knows that despite careful operation, some few debts can go bad in any business, whether selling products or services. However, if the creditor is using the accrual method of accounting, uncollectable business debts are deductible in computing his income tax. The circumstances under which the debt will be considered uncollectable for tax purposes, and the manner in which it can be deducted are explained by the American Institute of Certified Public Accountants as follows:

Bad debt deductions are allowable not only for debts arising out of your business, but for non-business debts as well. However, the non-business debts are deductible only within the limits applicable to capital losses. This article will be concerned with business bad debts, which are debts created or acquired in business; these are fully deductible.

When Does a Debt Become Bad?

The income tax deduction must be taken for the year in which the debt becomes bad. The creditor does not always have to wait until a debtor is declared bankrupt before a bad debt deduction is claimed. In some cases, it is clear before a bankruptcy settlement is reached that a debt is worthless.

Bankruptcy may confirm beyond any doubt that a debt is worthless but this in itself does not require that one wait for bankruptcy proceedings to be completed. Worthlessness is the test. In other words, the debt must seem uncollectable now and in the future. This is after every effort has been made to collect it. Just how far one goes to collect depends a great deal on sound business judgment. It isn't always necessary to take a debtor to court. If it can be shown that even if a lawsuit were won it would still be impossible to collect, then it would be foolish to throw good money after bad by taking the debtor to court.

It is also not necessary for the entire debt to be uncollectable. The creditor is permitted to claim a deduction for a partially worthless business debt where it can be shown that the debt is recoverable only in part.

Bad Debts on Your Books

The first year in which a debt becomes worthless to the business, the creditor must decide on an accounting method for handling bad debts. This method must then be followed each year unless permission is obtained from the Commissioner of Internal Revenue to make a change. The choice will be between deducting the debts as they become uncollectable or deducting an estimated reserve each year for debts that are expected to become uncollectable.

Reserve for Bad Debts

This choice between using the charge-off or the reserve method for claiming bad debt deductions should be made with some care. There are many situations in which the reserve method can make a significant tax difference. For example, an automobile dealer may want to use the reserve method to offset, in part, the reserves withheld by finance companies which the courts have held to

constitute taxable income to the dealer.

Generally, a reserve for bad debts will be based on experience. One cannot arbitrarily guess at the percentage of accounts receivable likely to go bad. A certified public accountant, for instance, will determine an adequate reserve for bad debts as a normal part of his audit procedure. To do this, he will analyze the accounts receivable to find out which accounts are past due, and the length of time they have been outstanding.

He will then evaluate the slow-moving receivables in light of discussions with the credit manager or with whomever handles collections, and decide on the amount that may not be collected. A reserve based on a factual analysis such as this will almost invariably be acceptable to the Internal Revenue Service.

If a firm does not have a CPA, and must decide whether it is better off to use the charge-off or reserve method for claiming bad debts, the owner will need to know how the reserve works. Say, for example, that at the end of the year, accounts receivable are \$20,000. Based on an analysis of the accounts, it is determined that \$600 would be a reasonable estimate of accounts likely to become uncollectable. Thus \$600 is deducted as a reserve for bad debts.

Then the following year, \$550 worth of receivables actually go bad,

leaving \$50 in the reserve account. Receivables are now up to \$25,000, and you estimate that \$750 will become bad debts. The reserve still has \$50 left over from the previous year, so the firm deducts an additional \$700 as a reserve for bad debts, and brings the total reserve up to the estimate of \$750. This same procedure would then be followed each year.

There are several instances in which a seemingly uncollectable debt could be repaid. For example, a debtor may be in such bad financial condition that there is every justification to consider his debt uncollectable. A few years later, the success of this debtor's business finally results in payment of the debt.

If later payment is received on a debt charged off in an earlier year as uncollectable, the payment must be reported on the company's tax return as income, but only to the extent that the earlier charge-off helped reduce the tax.

The amount of tax saved when the deduction was made has nothing to do with it. It is the amount of the bad debt used advantageously as a deduction that should be considered here. The foregoing applies only to a taxpayer who has been deducting bad debts on a charge-off basis. Those taxpayers who are on a reserve basis will credit any recoveries to the bad debt reserve.

Washington Field Day Shows Fertility Values

PROSSER, WASH.—The Corn-Hog Field Day recently held at the Irrigation Experiment Station at Prosser, showed the importance of proper fertility practices in growing top yielding corn crops.

Additional featured subjects at the well-attended field day were dwarf corn varieties, 5-Acre Corn Contest Summary, Do's and Don'ts of Corn Production, and Effect of Environment and Feeding Methods on the Production of Swine.

C. Emil Nelson, experiment station agronomist, outlined the important points of optimum corn production: (1) Pick out the correct hybrid for the area; (2) be sure to have the seed "cold tested" at the seed lab in Pullman; (3) plow under or sidedress at least 100 lb. N, 50 lb. P₂O₅, and 8 lb. actual Zn per acre. (Nitrogen needs will vary from 100-200 lb. of actual N depending on whether the corn is being planted on alfalfa ground or whether it is being planted on wheat ground with lots of stubble); (4) be sure to use soil tests to pinpoint fertility needs; and (5) pre-irrigate where possible and keep the soil above the wilting point right up to harvest time.

Louis Boawn, soils specialist, discussed the increasing need of crops in the Columbia Basin and Yakima Valley for zinc. "We have noticed that ground in sugar beets for a few years in a row will really deplete the soil of available zinc," Mr. Boawn stated. "The recommendation to cure a zinc deficiency is to plow under 8 lb. of actual zinc per acre every three years. An immediate solution to the zinc problem where it is seen visually on a growing crop is to spray the crop with a 1.5% zinc sulfate solution."

F. Todd Tremblay, Pacific northwest regional director of NPFI, discussed the 5-Acre Corn Contest held in Grant, Benton, Adams, and Franklin counties under the direction of County Agents Delany, Gerlitz, Voss, and Deming. "Corn yields for the entire contest averaged about 140 bu. per acre," Mr. Tremblay stated. "The average fertilizer use was about 160 lb. N, and 60 lb. of P₂O₅. About 10% of the fields had received a zinc application within the last few years. Two of the important points noted in the program were: (1) Field practices were gradually approaching those recommended by the college, and (2) individual farms varied considerably in fertilizer and moisture requirements. For this reason the use of soil tests should be increased considerably and individual recommendations made accordingly."

Dr. J. Nofziger, swine specialist, and Dr. W. Heinemann, animal specialist, discussed swine production possibilities in the irrigated sections of eastern Washington.

Missouri Names New Soils Department Head

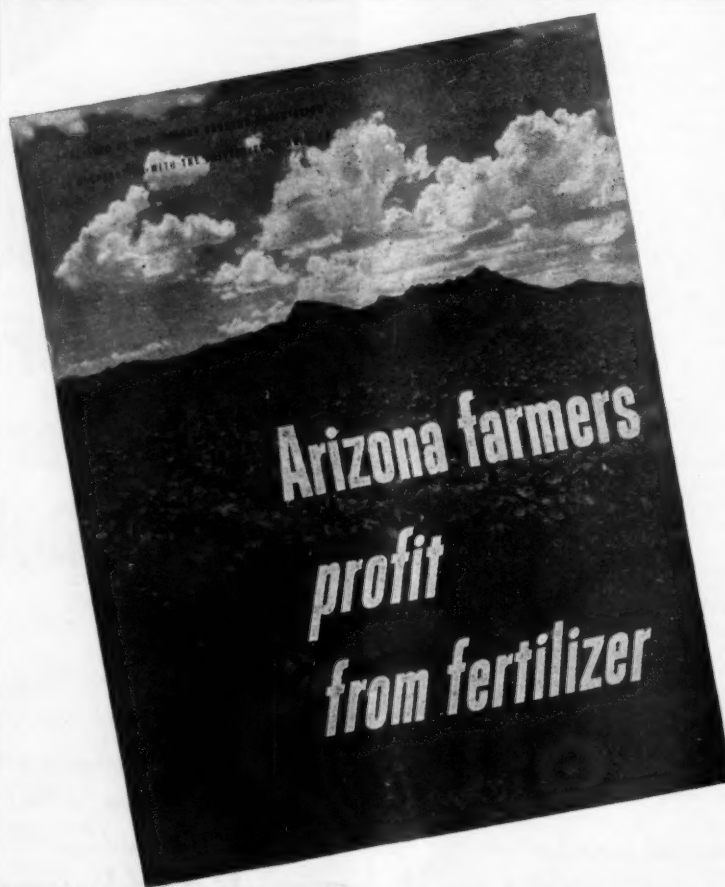
COLUMBIA—Dr. George E. Smith, a faculty member of the University of Missouri College of Agriculture, has been named chairman of the college's department of soils.

The appointment was effective Sept. 1, according to John H. Longwell, dean of the college.

Dr. Smith replaces Dr. W. A. Albrecht, who has been department chairman since 1938. Dr. Albrecht has reached mandatory retirement age and was made a professor emeritus of soils at the university's June commencement.

SALES ANNOUNCED

RICHMOND, VA. — Consolidated net sales of the Virginia-Carolina Chemical Corp. for the year ending June 30, 1959, were \$81,481,965, compared with \$67,523,085 for the previous year, the company reported. The sales improvement reversed the downward trend of the previous five years, the company noted.



NEW BROCHURE—"Arizona Farmers Profit from Fertilizer," a new brochure published by the Arizona Bankers Assn. in cooperation with the University of Arizona is now off the press, announced Dr. Richard B. Bahme, western regional director of the National Plant Food Institute, who worked closely with these groups in preparing the 20-page booklet. "The booklet, attractively covered with a typical Arizona cotton scene in color, explains how commercial fertilizers can be used to produce higher and more profitable crop yields," Dr. Bahme said. "It advises farmers to put modern scientific practices to work and combine them with good business principles which will return the best profit."

IN BED-GROWN VEGETABLES . . .

Fertilizer Placement Makes Difference Between Excellent and Fair Crop Yield

By Dr. O. A. Lorenz*

University of California
Riverside, Cal.

WE ARE all aware that both the number and the intensity of problems of fertilizer placement have increased greatly during the past few decades. This has been due to many factors including increased rates of fertilizer application and to new materials, especially with changes from organic sources to completely inorganic chemicals. Cultural factors such as irrigation, methods of preparing the seedbeds, new equipment, and row spacings, have added further complications. Observations on bed-grown vegetables have firmly convinced me that there is no one best location in the soil to place fertilizers for all crops and conditions.

First to be discussed are some of the basic considerations of fertilizer placement, results from experiments under field conditions, and some of the problems dealing with the placement of individual materials.

There are several advantages commonly claimed for the localized placement of fertilizer near the seed or young seedling. First, the restricted contact of fertilizer with the soil lessens the fixation of phosphate and other nutrients. Second, the plant food is placed within easy reach of plant roots, and the possibility of injurious concentrations is minimized by proper placement. Third, fertilizer placed in a band along the row may not be within easy reach of weeds. Fourth, by selective placement in the bed we can have considerable control of the rate of nitrification of nitrogen sources and of the leaching of nitrogen materials. This latter is particularly true with bed-grown vegetables.

There are two general rules that govern fertilizer placement. First, place the nutrients in an area where the plant roots can reach them but deep enough in the soil that the nutrients are in moist soil where there are ample and active roots. Second, place the fertilizer as close to the seed or plant as may be possible without causing burning. The exact procedures to use in order to meet these requirements resolve the problems of fertilizer placement.

There are several factors which are important in understanding where to place fertilizer in the soil. The first factor concerns the materials themselves. Much of the harm from fertilizers placed too close to germinating seeds results from the fertilizer actually drawing water from the seed. Some materials do, however, exhibit certain toxic properties in addition to that of seed desiccation.

In general, nitrogen materials are the most detrimental to seed germination followed by potassium, and phosphorus the least. In actual placement experiments it has been shown that as little as 10 lb. nitrogen an acre placed with the seed has reduced seed germination. Great differences were detected between the various nitrogen carriers. The nitrogen materials found most deleterious to germination were calcium cyanamid and aqua ammonia, followed in order by urea, sodium nitrate, potassium nitrate, ammonium sulfate, and ammonium nitrate.

Aqua and anhydrous ammonia fertilizers should be placed farther from the plant than the dry sources of ammoniacal nitrogen such as ammonium sulfate, ammonium nitrate, and ammonium phosphate. This is due in part to greater movement in the soil of the

nitrogen from aqua and anhydrous than from the dry salts.

A good general rule would be to place aqua and anhydrous ammonia about six inches from the row and six to eight inches deep in the soil. Some crops are especially sensitive to free ammonia and placements of aqua and anhydrous ammonia closer than this generally should not be attempted.

Some of the relationships of the soil and fertilizer placement are well known. In the first place we can band the fertilizer closer to the seed without causing injury on a heavy soil than we can on a light textured soil. On sandy soils there is much more leaching of nitrogen than on the heavy soils, which often necessitates the use of higher rates of fertilization. On soils which are already high in salts, the application of fertilizer close to the row only makes a bad situation worse. The pH of the soil is undoubtedly of importance with some of the sources of ammoniacal nitrogen.

Soluble salts go into solution in moist soil and move to some extent. The rate and distance of movement depend upon the chemical nature of the soluble salts and upon the character of the soil. They may move upward during dry periods or be carried downward with rain or irrigation water.

Water applied in irrigation furrows moves chiefly downward but some moves laterally into the bed and even upward in the bed, by capillarity. This movement can carry fertilizer salts with it, and fertilizer placed a short distance directly under or under and outward from the seed may be concentrated near the seed and poor germination will likely result. On the other hand, if the crop is sprinkler-irrigated, fertilizers placed near or under the seed row may be carried downward and harm may not result.

Two excellent papers giving good general recommendations for the placement of fertilizer for individual crops have recently been published. One of these is entitled "Methods of Applying Fertilizer," and was distributed by the National Plant Food Institute in 1958. The other is called "Fertilizer Placement" and was published by the American Potash Institute. As previously stated, there is certainly no one best method of fertilizer application for all crops and soils. On the other hand, most experiments in the west, as well as for the entire United States, have shown some superiority from localized placement of fertilizer. This has been especially true when minimum rates of fertilizers have been used.

With crops planted "on the flat" which receive water from rainfall or by sprinkler or flood irrigation, the most common recommendation is to place the fertilizer about three inches to the side and two to three inches below the seed. This is far enough from the seed that harm does not commonly result but is also close enough that nutrients are available to young seedlings at a very early stage.

It is necessary to have some nutrients close to the young seedlings. This is especially true for phosphorus, and with practically all crops the fertilizer application must result in some phosphorus being placed close to the seedlings. With many crops where phosphorus is the only nutrient applied

and where the rate of application is small the phosphate fertilizer can be applied with the seed or placed only an inch or two directly under the seed.

Results are available from a number of fertilizer placement experiments with vegetables in California. With most crops the best results have been obtained by placing the fertilizer in bands in the shoulder of the bed 2-3 inches from the plant and about 3 inches below the seed.

In only a few cases have deleterious effects been noted from placing the fertilizer in this area and for the sake of insuring a good stand this is the best general location. It results in the fertilizer being relatively near for those crops that require close placement. It should be repeated, however, that fertilizers containing free ammonia should be placed farther from the row and deeper in the soil than is recommended for the dry fertilizers.

During winters of excessive rainfall when leaching is extensive, satisfactory results have been obtained by placing the fertilizer about three inches deep in the center of the bed. It is probable that fertilizer placed in this location is more resistant to leaching than that placed closer to the furrow. During dry weather when it is necessary to "irrigate up" the crop, placement of fertilizer in the center of the bed usually has been less beneficial than placement in the shoulders of the bed. Center of the bed placement often results in the fertilizer being too far away from the young plants.

Experiments have shown that onions benefit greatly from fertilizers placed very close to the plant. The highest yields and earliest maturity have been obtained with phosphorus placed about four inches deep directly under the row and in many cases it also has been best to place the nitrogen directly under the row. On very light soil and with very high rates of fertilization, some injury has been observed from under-the-row placement. Fertilizers applied four to six inches from the row are often of very little benefit. Likewise a delay in application for as long as six weeks after seeding or transplanting often renders the application of little benefit.

The placement tests with lettuce have usually been a comparison of banding versus broadcasting. Results have been excellent with both applications but whatever the method it must result in a good supply of all nutrients and particularly phosphorus being available for the crop during the early seedling stages. This means that some fertilizer and especially phosphorus must be placed close to the plant.

With the rates of fertilizer commonly used, the practice of broadcasting and then listing up the bed, as is done in Imperial Valley and other areas, results in the fertilizer being localized in about half of the fertilized area. It gives what might be termed a very wide band about 4 inches deep completely across the bed which contains about half of the fertilizer. The top four inches of the bed then contain the remaining half of fertilizer, which is mixed throughout the entire volume of soil. If the rate of fertilization were reduced to, say, only 30 lb. P₂O₅ an acre rather than over 100 lb., then banding it directly under the row probably would be the best.

Broadcasting fertilizer and then

listing up the high melon beds, as practiced in the Imperial Valley, is not as good as banding between row and the irrigation furrow because it results in too much of the fertilizer being high in the bed where it is not within reach of the roots, at least until the latter stages of growth.

The importance of placing a small amount of phosphorus directly under the plant row has been shown to be advantageous for tomatoes, lettuce, onions, cabbage and other crops. Direct-seeded tomatoes in northern California make much more growth early in the season by banding about 25 lb. P₂O₅ under the row. This may be reflected in earlier maturity and even in increased total yield. As a matter of fact, the practice is now so common that nearly all of the tomato fields now receive some phosphate fertilizer placed several inches deep at planting or preplanting. Sometimes a small amount of nitrogen is also applied. All this serves to emphasize the importance of available nutrients during the early stages of plant development.

Experiments with potatoes in many areas throughout the United States have shown excellent results from banding the fertilizer 2 inches to each side and 2 inches below the seed piece. In tests here in California we have found little difference between bands 2 inches below the seed piece and level with the seed piece, but placements 2 inches above the seed or as much as 4 inches below the seed have not been as satisfactory.

Because of the danger of burning, the lateral placement of fertilizer should not be closer to the seed piece than 2 inches. With rates of fertilization up to 800 or possibly 1000 pounds per acre the 2x2 inch locations are safe but in light soils, where higher rates are often required, part of the fertilizer should be sidedressed soon after plant emergence rather than to attempt to apply it all at the time of planting.

During the recent years there have been discovered several interesting facts relative to fertilizer placement. It has been shown that banding nitrogen and phosphorus together results in faster and greater utilization of phosphorus than when the nitrogen is not placed with the phosphorus. Also some research has shown slightly greater phosphorus absorption with ammoniacal nitrogen placed with phosphorus than from nitrate sources so placed. These differences might be explained on the basis of the pH effect on phosphorus solubility, the physiological relationship of nutrient uptake by complementary ions, and other reasons.

Soil temperature has great influence on the availability of phosphorus. In recent tests in Pennsylvania it was found that under cold soil conditions better growth of plant and greater phosphorus uptake were obtained from phosphorus placed directly under the seed row than from phosphorus mixed with the entire soil mass. At warm or high soil temperature there was little difference in plant growth or absorption of phosphorus from placement under the row as compared to mixing phosphorus with the soil mass.

This means that band application
(Turn to PLACEMENT, page 19)

*From paper presented at recent California Fertilizer Conference.

SCHOOL

(Continued from page 1)

Floyd, director, Plant Food Institute of Virginia and North Carolina; W. B. Little, representative of the Farm Bureau; R. W. Shoffner, assistant director, North Carolina agricultural extension service; and C. B. Ratchford, now director of the agricultural extension service in Missouri.

In a talk outlining "What We Are Selling," A. P. Gates, sales manager, Virginia-Carolina Chemical Corp., Richmond, Va., asked the conventioners to visualize what they are trying to accomplish, what they are trying to sell.

He urged the salesmen present to "act like salesmen, think like salesmen and know what we are selling when we stand up to face the customer." Mr. Gates declared that no particular skill is required to sell on the basis of price alone. "We are apparently losing sight of a very important concept about the fertilizer business: we have a product that has a one-time use; and the farmer can return at least \$3 for each \$1 invested. He is using only about one half of the fertilizer that he ought to be using." (Full text of Mr. Gates' talk appears elsewhere in this issue of Croplife.)

Dr. M. S. Williams, chief economist, National Plant Food Institute, Washington, D.C., told the group that it is necessary for the salesman not only to know his product well, but also the characteristics of his potential customer.

In this regard, he reminded that farmers are businessmen and are always on the lookout for better ways to increase production, cut costs, and increase their profits. For most, he went on, the best possibility for increasing profits is to adopt cost-cutting methods of production. Fertilizer, he said, represents one of the best ways to accomplish this end.

"Our customers have many people competing for their dollars," he said. "The other farm suppliers have items that farmers want and must use to produce efficiently. Among these items are: machinery, insecticides, labor, buildings, and many others. In addition, the farm family wants many consumption items that compete for their dollars. This list can be a mile-long, including such things as: new car, refrigerator, television and new clothes.

"Our customers are motivated to buy fertilizer two ways," he said.

"(1) Because they consciously determine that fertilizer will help them reach certain goals by thinking;

"(2) Because subconsciously they feel fertilizer will help them reach certain goals by emotion. When we recognize the basis for our customers' decisions, we are likely to be more successful in selling them what they want.

"Most good customers are intelligent businessmen, yet, many have little formal schooling, they rely on someone else to try new things first, many have to 'see to believe,' and all are experts at raising objections.

"Our customers want many different things, such as more profits, better living, respect from neighbors, prestige, to feel important, and security. If we can find out those things in which the individual customer is most interested, then we can present our story to him so that it will help him see where fertilizer can contribute to what he wants."

Dr. Williams continued by reporting that farmers like to make up their own minds, but usually turn to someone else for help in deciding, and they rely heavily on personal contacts for information and help. He quoted results from the recent NPFI survey which indicated that fertilizer dealers, neighbors and county agents are prime sources of information for the farmer.

He declared that trends in North Carolina over the next several years will determine the kind of market to be had. Some of these developments are likely to be in the form of fewer farms and larger farms, with the result that there will be fewer customers, but each one will buy more; more specialization will arise and there will be a generation of better educated customers. They will demand more service, and there will be more competition, making further effort mandatory to survive.

Supplementing Dr. Williams' suggestions, R. S. Fisher, North Carolina farmer, gave some of his own views on fertilizer selling. He said he is convinced that agricultural production is "very dependent upon the addition of fertilizer and lime to soils." He arrived at this observation, he said, after years of study and experience. "The only reason a farmer buys fertilizer is to add plant nutrients not present in adequate supply in the soil," he said. "You can't feed fertilizer to cattle nor roll it in a cigaret. Its only use is to improve soil fertility levels."

The farmer said that soil on his farm is basically unproductive, but produces well when fertilized properly. He said that soil tests indicate different levels of fertility and different needs in various portions of his own farm.

Speaking to the fertilizer salesmen present, he stressed the importance of the manner in which a salesman approaches a farmer. "He appreciates your help, advice and information, but he also expects more in the way of service," he added.

"Many farmers are learning that their soils differ widely in fertilizer requirements. It is important that you help your customer learn what fertilizer will give him the greatest profits. I can mention soil testing at this point," he went on.

"Be prepared to give farmers some field service rather than only a price list and a sales talk. You can help in showing them how to take soil samples and while their crops are growing you can identify nutrient deficiency symptoms. Look not only for the immediate sale, but also for those of the future.

"Service to farmers by fertilizer salesmen will also include activities such as demonstrations. For example, I have on my farm a tobacco demonstration which every fertilizer salesman should be interested in. Fertilizer salesmen themselves should often help farmers make comparisons in the field. I would like to see every salesman in my area familiar with the results of all demonstrations with crops such as those sponsored by my county agricultural agent.

"If possible spend some time before you call on a farmer studying your approach, his background, and his needs. The time you choose to approach a farmer about fertilizer can be important. Call and make appointments. Most farmers are used to them by now. He has to call for appointments for nearly everyone who serves him so he expects them. During noon hour is a poor time to call. I could give a long list of reasons for this.

"Some farmers never buy on the farm. I seldom do because I like to go to town occasionally. Prices are so competitive we need not worry too much about them.

"Farmers expect to pay more for deferred payments than for cash prices. We know what interest means for we deal with it constantly.

"In your approach to the farmer, be sure to let the farmer do some talking and you can learn how he is thinking. I do not like for a fertil-

izer salesman to run his competition down. A more constructive approach is to consider the questions the farmer has in his mind as to why he buys fertilizer in the first place and what he wants in fertilizer.

"I would like to see salesmen think more about how they can serve the farmer rather than how they can sell to him. We are all salesman in one way or another and if their goals are objective and trustworthy their reward will be great."

E. A. Fails, professor of economics, N.C. State, described some of the essential points of successful selling in his portion of the program. "Salesmanship," he said, "is the judgment and ability to sell the right man the right quality and quantity of goods at established prices, and to follow up that sale with assistance in order to assure mutually profitable, continuous relations with the customer."

He elaborated upon this statement by reminding that the salesman must have enthusiasm for his product, but this quality must first be based on knowledge of the product being sold. Other attitudes necessary to good selling are those of sincerity and being positive. These attitudes must combine with the fortitude necessary to bring them into focus.

John M. Curtis, extension marketing at S.C. State, presented what he called the "five P's": Prior planning prevents poor performance. Elaborating on these, he urged the salesmen to plan, decide on a program of action, study the product, the customer and selling procedures.

"You must rehearse, practice, improve your selling technique," he said. "You probably know a great deal more about your product than you do about your customers and your selling manners," he added. The speaker reminded the salesmen that many statistics are available on their customers regarding education, their attitudes, their backgrounds.

He urged the salesmen to find out all they can about their customers in order to fit their sales presentation appropriately. "You want understanding, not antagonism or frustration," he reminded.

Mr. Curtis likened salesmanship to courtship and marriage. "You have to live with the results of your close... a divorce means no repeat sales. You have to go through the trying courtship period with a new customer instead of enjoying the warmth of repeats from a satisfied friend," he went on. "Any deceptive tricks or distortions of truth will come back to haunt you, in time. The seeds you sow must be accounted for. You should be willing to live with today's actions tomorrow."

Other speakers on the educational program discussed reasons why a farmer should buy fertilizer.

W. C. White, soil fertility extension specialist at N.C. State, discussed the farmer's desire to increase crop productivity. He pointed out that farm income and levels of living in the state are closely related to soil productivity. When the latter is high, so is farm income.

By the same token, the opposite is also true as evidenced by state figures indicating that 70% of all North Carolina farms in 1950 produced less than \$2,500 worth of products for sale. He reported that despite the use of fertilizers in the state for the past 125 years, relatively low fertility levels still continue.

He concluded by saying three principal factors prevent farmers in his state from realizing their full soil potential. These are: Lack of knowledge on the part of the producer, insufficient investment capital and price uncertainty.

William L. Turner, farm management expert, N.C. State, said that farmers buy fertilizer to increase profits. He reminded that fertilizer

costs have not risen in keeping with other things the farmer buys, and if a farmer has the capital or readily available credit, investment in fertilizers should bring better returns than the same money spent on some other materials or services.

The speaker said that farmers in the Northern Piedmont portion of the state are using only 40 lbs. nitrogen an acre of corn, and Coastal Plain farmers are using about 75 lbs.

The use of successful agronomic selling tools was outlined by Eugene J. Kamprath, also of the State College staff. He declared that soil testing techniques provide a major selling weapon, as the evaluation of the soil fertility level.

Demonstrations, too, are valuable. "Often farmers are reluctant to use high rates of fertilization or new fertilization practices," he said. "A demonstration of these things is a very effective means of persuading the farmer to adopt them. Demonstrations need to be carefully planned so that all the factors necessary for growth are supplied adequately. . . . They should be planned on the basis of information obtained from a soil test," he added.

The value of public relations was pointed out in a talk by George H. Soule, public relations department of E. I. duPont de Nemours & Co., Wilmington, Del. He said that public relations present opportunities as well as problems. "The chief public relations opportunity of the fertilizer industry and of American agriculture which it serves, is to get credit for the good they are doing. For example, dollar for dollar, a bag of fertilizer is one of the best buys in today's economy. The fertilizer price level has stayed well below the inflationary trend of most everything else, and each dollar invested in fertilizer will yield a return of \$3 to \$5," he went on.

"Has this story been presented to bankers who provide farm credit for the purchase of fertilizer? For that matter, has it even been presented adequately to farmers themselves?

"We consider that our agriculture is the most successful and productive the world has ever known. Most farm people have a standard of living as high as any city family can expect. Yet, farmers feel discouraged about their own future and they certainly are not getting credit from the public for what they have been accomplishing. There is no other country on earth where the working man spends so small a proportion of his working day earning his food.

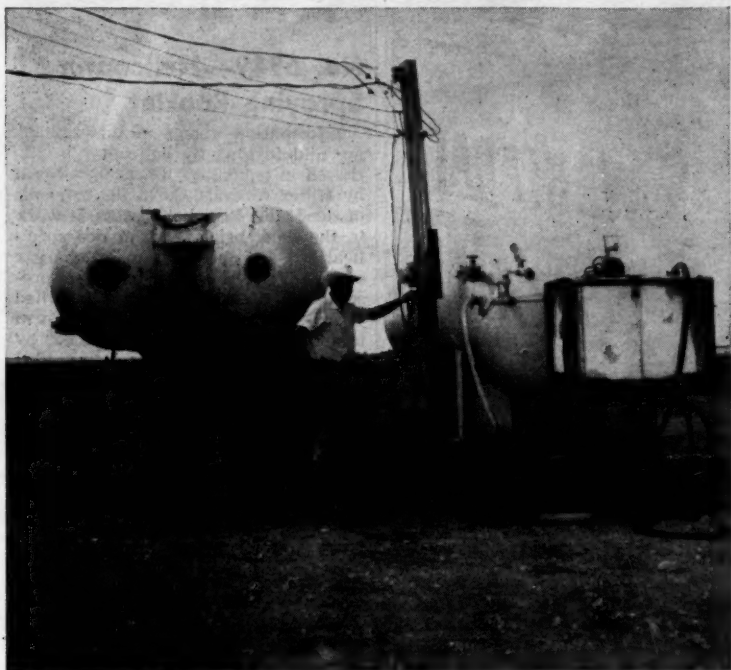
"Behind the nation's estimated 5 million salesmen are a host of specialists and auxiliary services. The technical age has caused a sales revolution. In today's economy a fertilizer salesman must offer more than a good product. You must offer, as well, the technology to go with it. Unless your customers know how to use the fertilizer profitably, you may make no further sales.

"With all this, you are also your company's public relations representative in your territory, and eyes and ears for management," he told the salesmen.

H. D. Wellington in New Gilman Paper Post

NEW YORK—H. C. Lawless, vice president and director of sales for Gilman Paper Co. and its subsidiaries, St. Marys Kraft Corp. and Kraft Bag Corp., has announced the appointment of H. D. Wellington to the newly-created post of assistant general sales manager, with headquarters at 630 5th Ave., New York. Mr. Wellington formerly was western sales manager, located in Gilman Paper Co.'s Chicago office.

J. S. Ritter, formerly assistant, became western sales manager, with headquarters in Chicago. J. J. McDermott becomes Mr. Ritter's assistant.



L. B. JONES, of Jones & Son Fertilizer Co., Seminole, Texas, is shown with anhydrous storage units. The transport trailer-tank at left is used to haul in the fertilizer.

Non-acid Fertilizer Succeeds For Prosperous Illinois Firm

By AL P. NELSON
Croplife Special Writer

The production and sale of non-acid fertilizers are carried on by the Hoover Soil Service, Gilman, Ill. It is an organization which was founded by Will J. Hoover, whose son, Roy, is now president of the company.

When Will Hoover started the company 16 years ago, he sold his products only to farmers in the county, but today Hoover products are sold in 12 midwestern states. A fertilizer plant in Fremont, Neb., makes Hoover fertilizers according to specifications, too.

"We have an 18-ton truck which transports our fertilizers to most areas where they are used," declares Roy Hoover, "and we key our production according to seasonal demands. Our price structure is quite competitive, except for long hauls where transportation costs are higher."

The Hoover plant makes fertilizers of many analyses for farmers from a low material of 1-1-1 to 5-20-20 to 10-52-17, or any mixture that the farmer demands in quantity.

The firm uses the brand name "Terra-Zyme." For its 10-10-10 analyses, the firm uses such chemical ingredients as potassium phosphate, urea, K. rock and Chi-organic. The fertilizer firm stresses the importance of as much organic material as possible. Mr. Hoover states that his company fortifies all blends with bacteria, enzymes and hormones which the firm cultures at Gilman.

"We were once known as an organic fertilizer firm," states Roy Hoover, "but today we are between the organic and chemical field. In addition to materials mentioned above we use rock phosphate, some muriate of potash, diammonium phosphate and Calcium phosphate (latter from TVA). We lay

much stress upon trace minerals in our fertilizers."

The Hoover Soil Service has a soil testing laboratory under the supervision of Roy Hoover. Dealers send in samples for farmers, and a charge of \$1 is made per test. This charge is a credit if the farmer decides to buy Hoover fertilizer. Some soil testing is done for gardeners at \$2 per sample.

In a brochure for its salesmen, Hoover Soil Service has this to say about soil tests:

"Soil tests are indicators of what might be wrong or right with the soil. Other factors such as temperature, moisture, water table and organic content greatly influence the value of any soil analysis."

"Soils tests are made strictly on a chemical evaluation and no attempt is made in the test to determine whether you have sufficient rainfall or not. With the results of your test you are the one best qualified to adjust the test for your area as to how much rainfall you can expect which will influence the crop grown."

"Alkaline soil is very difficult to adjust sometimes and it may take years to see any improvement in the pH or structure of the soil. It is our belief that there are a number of factors that go together to make up a good soil. They are: soil structure, holding capacity of soil for plant nu-

(Turn to NON-ACID, page 15)

OUTDOOR ROAD SIGNS, such as the one shown in the top photo at right, are used by the Hoover Soil Service of Gilman, Ill., to advertise its products. In the lower photo, Roy Hoover, the president of the firm, uses a scoop loader to get materials from a bin, preparatory to making fertilizer.

Custom Applying, Rentals Build Dealer's Business

By Jess Blair
Croplife Special Writer

Custom application and rental equipment have been the main factors in the success of the Jones & Son Fertilizer Co. of Seminole, Texas. Sales have increased each year since they started about four years ago, and in 1959 will pass the \$100,000 mark.

The partners, R. L. Jones and his son L. B. are cotton farmers and have the plant located at their farm about six miles north of Seminole. They were enthusiastic users of fertilizer for irrigated cotton, and bought their own spreaders several years ago.

Neighbors observed the increased yields and asked if Mr. Jones and his son would put down some fertilizer on their farms. These requests grew until the partners found themselves in the fertilizer business.

"Since we operate several hundred acres of farm land both here and over near Lamesa, we knew that only a big volume business would make money," said L. B. "We then decided to equip ourselves and go after the big accounts."

The firm sells both liquid and mix-

ed fertilizer, though the liquids are becoming more popular. The company now has storage tanks that hold 8,000 gal. of anhydrous ammonia and a transport trailer tank with a capacity of 5,000 gal. They use it to haul the material direct from the manufacturer at Etter, Texas, which is about 240 miles away.

Rental equipment consists of nine applicators, with each one being able to cover four rows at a time. Applicators are rented to farmers for \$10 per day. If they want to rent a company tractor, this costs them an extra \$10.

Jones & Son also does custom application, and charges \$1.50 per acre for a dual application of nitrogen and phosphorus. The fertilizer used is sold for a customary price, though the company does not engage in price-cutting practices.

"If someone else can do it cheaper, we let him have it," said L. B. "We have big heavy rigs that will do a good job. Our drivers are well-trained and my father or I inspect the work to see that it is done right. Some of these out-of-county contractors are more interested in the quick profit they make."

The firm has never considered loaning equipment free of charge.

(Turn to RENTALS, page 15)



WHAT'S NEW

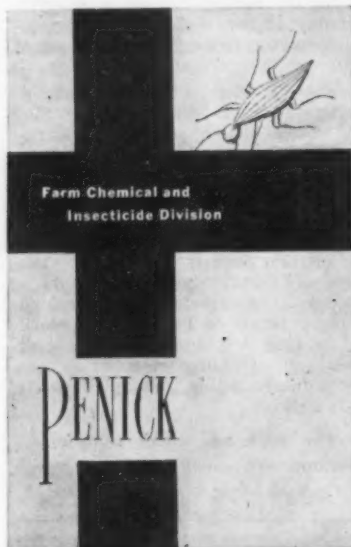
IN PRODUCTS · SERVICES · LITERATURE

No. 6956—Tolerance Folder

A wallet-size agricultural chemicals tolerance folder, giving limitations of days prior to harvest, has been announced by United Heckathorn. The new folder is revised with up-to-date tolerances including the newer pesticides, the company says. Copies of the folder can be obtained by checking No. 6956 on the coupon and mailing to this publication.

No. 6957—Farm Chemical Catalog

S. B. Penick & Co. has issued a 40-page catalog covering the products



of the company's farm chemical and insecticide division. Detailed information is presented on product applica-

tions and the company's research and production facilities are illustrated. Copies of the catalog are available by checking No. 6957 on the coupon and mailing to this publication.

No. 7649—"New Leader" Spreader

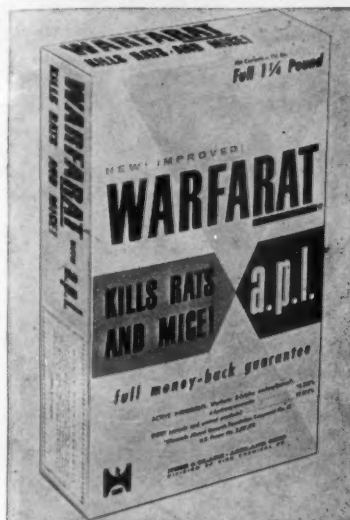
Highway Equipment Co. announces the New Leader L-72S Spreader with extra steep sloping sides (about 60°) designed to haul and spread material of a damp and dense consistency. In addition to the steep sides and formed contour for better flow,



the company says the equipment features laterally reinforced end-gates. A high carbon steel drive shaft in the conveyor gear case turns the 30 in. conveyor chain. Twenty inch spinners uniformly distribute material, the company said. The spreader is available in four different body lengths from 9 ft. to 15 ft. with respective capacities from 5.2 to 8.8 cu. yd. For details check No. 7649 on the coupon and mail.

No. 7650—New Package Size

Warfarat, a rodenticide produced by Hess & Clark, is now being marketed in a new package size and design, the company announced. The



package is wider and taller and now weighs 1 1/2 lb. It incorporates the basic Hess & Clark colors of red, yellow and black. The 4 lb. size contains eight 8 oz. self feeders. Further details about the changes can be obtained by checking No. 7650 on the coupon and mailing.

Also Available

The following items have appeared in previous issues of Croplife. They are reprinted to help keep dealers on the regional circulation plan informed of "What's New."

No. 6946—Liquid Grain Fumigant

Frontier Chemical Co., division of Vulcan Materials Co., announced the development of a liquid grain fumigant under the trademark "Cloro-fume." The product, which gets its name from its chief ingredient, chloroform, is the result of four years of research and testing, the company said. Company literature listed the following advantages: High insect toxicity; greater grain penetrating power; savings of 20-30% per bushel of protected grain; safe handling, and no health hazard to human life when used with reasonable care. It is composed of three 100% active ingredients—chloroform, carbon disulfide and ethylene dibromide. For further information about the product, check No. 6946 on the coupon and drop in the mailbox.

No. 6948—Broadcasting Unit

Larson Machine Co. announces a "Broad-Caster" for broadcasting pellet type fertilizer or small grains. A feature of the machine, according to the company, is a specially designed feed opening slide connection that eliminates the need of disconnecting



control parts when removing units. Opening, closing and adjusting are handled from one control within reach of the tractor seat. The feed slide control arms provide for adjustment on either side separately. A "Jab-tator" agitator has been designed to reduce speed of motion so the fan shaft can be used for agitation to maintain a constant flow without causing violent churning of material. For more complete information about the product check No. 6948 on the coupon and mail.

No. 6949—Helicopter Spraying Booklet

Information about spraying, dusting and fogging by helicopter is discussed in a booklet recently released by Hiller Aircraft Corp. Photographs of the Hiller 12 E helicopters at work in the field, brief performance specifications and information on charger operator services are also presented. Copies of the booklet, called "New Workhorse for Forest, Farm and Ranch," can be obtained by checking No. 6949 on the coupon and mailing.

No. 6947—Handle Bag

Designed to lessen the load of carrying bulk packaged products in 25 lb., 40 lb., and 50 lb. multiwalls, the Hudson Pulp & Paper Corp. is pro-



ducing bags with side carrying handles. The construction of the handles provides for a pull of up to 250 lb., the company said. According to company literature, the handle bag was developed primarily because of the sharp rise in retail bulk packaging to increase saleability of the product and to lessen the handling cost to retailers. The handle feature encourages customers to carry home one or more packages. For details about the product check No. 6947 on the coupon and mail to this publication.

No. 6952—Chemical Catalog

A newly revised products list of "Hooker Chemicals" has just been published by Hooker Chemical Corp. Designated as bulletin No. 100-C, it contains brief descriptions, physical data, uses and shipping information with respect to the many chemicals listed. For a copy of the bulletin, check No. 6952 on the coupon and mail to this publication.

No. 6954—Face Shield

A safety helmet with a combination acetate face protector and soft vinyl hood and bib has recently been announced by Paulson Mfg. Corp. The makers claim this new type of shield offers top-of-head, full face and chin protection while working with flying particles of dust, powder, chemicals and paints. The headgear is interchangeable and is made of light

Send me information on the items marked:

- | | |
|---|---|
| <input type="checkbox"/> No. 6946—Liquid Grain Fumigant | <input type="checkbox"/> No. 6952—Chemical Catalog |
| <input type="checkbox"/> No. 6947—Handle Bag | <input type="checkbox"/> No. 6953—Utility Pump |
| <input type="checkbox"/> No. 6948—Broadcasting Unit | <input type="checkbox"/> No. 6954—Face Shield |
| <input type="checkbox"/> No. 6949—Helicopter Spraying Booklet | <input type="checkbox"/> No. 6955—Lift Truck Booklet |
| <input type="checkbox"/> No. 6950—Spreader Choice | <input type="checkbox"/> No. 6956—Tolerance Folder |
| <input type="checkbox"/> No. 6951—Industrial Truck Booklet | <input type="checkbox"/> No. 6957—Farm Chemical Catalog |
| | <input type="checkbox"/> No. 7649—"New Leader" Spreader |
| | <input type="checkbox"/> No. 7650—New Package Size |

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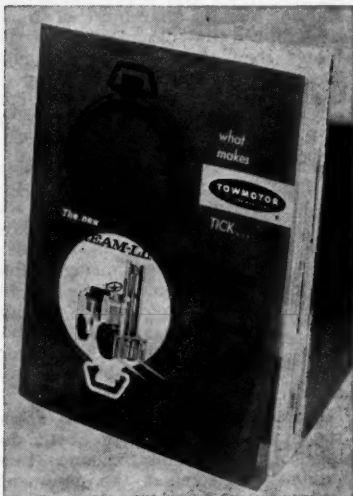


weight plastic. Headband is adjustable for marked sizes of 6 to 8.

The face protector is made of select optical plastic and is said to be free of any distortion as well as to be fire and spark resistant. The entire unit weighs less than seven ounces and is available with either attractive white or black unbreakable headgear. For further information, check No. 6954 on the coupon.

No. 6955—Lift Truck Booklet

Described in detail in a new 24-page booklet entitled, "What Makes It Tick?", just released by Towmotor Corp., are features of a new "Stream-



Liner" series of fork lift trucks produced by the company.

Among the design features incorporated into the new lift truck models are a new lowered cowl which gives the operator full vision to the forks, on either side, a new "direct view" instrument panel, and a new treadle-type accelerator that cuts driver fatigue.

According to Towmotor engineers, all operating controls on the newly styled "Stream-Liner" Series simulate those used on motor cars—to simplify operator training. The trucks are available in 8 different gasoline, diesel, or LP-gas-powered models, with lifting capacities ranging from 2000 to 4000 lbs., the makers say. Check No. 6955 on the coupon for a copy of the bulletin.

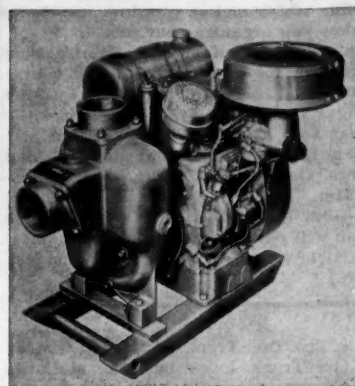
No. 6950—Spreader Choice

The "Challenger," a power-take-off driven lime and fertilizer spreader is now available with single spinner and 18 in. conveyor or double spinners and a 24 in. conveyor, announced Highway Equipment Co. The unit is a positive feed, self-unloading spreader. The conveyor and spinner system operates off the power-take-off. Body capacities range from 4.6 cu. yd. on the 9 ft. single spinner body to 8.8 cu. yd. on the 15 ft. double spinner model. More information including literature, complete specifications and name of

distributors may be obtained by checking No. 6950 on the coupon and mailing.

No. 6953—Utility Pump

Self-priming centrifugal "Flomax" pumps of the utility type, have been added to its line of centrifugals, rotaries and self-primers by Marine



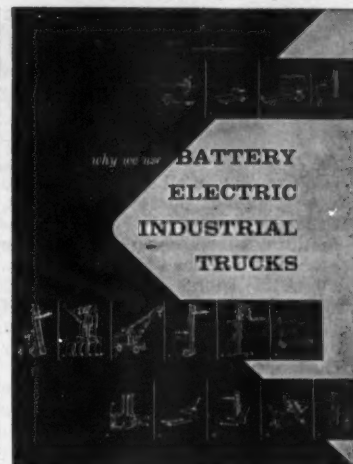
Products Co. This new series of pumps was designed expressly for pumping water and other fluids of similar viscosity at high altitudes, or for pumping fluids of higher specific gravity at lower elevations.

Other characteristics of this pump

are: 15,900 GPH and pressures up to 40 p.s.i., self priming, high capacity at high heads and having straight crankshaft-to-pump connection. The latter employs a standard straight keyed crankshaft, to permit quick change of engines in the field or the rapid changeover of an iron to a bronze pump. To suit special corrosive conditions of fluids, the open adaptor construction peculiar to the MP design prevents fluids from contacting engine shaft or its bearing to cause rusting and subsequent failure. For further descriptive information on the pump, check No. 6953 on the coupon and mail.

No. 6951—Industrial Truck Booklet

Major construction features and operating characteristics of a battery-powered industrial truck are contained in an 18-page booklet released by Electric Industrial Truck & Allied Products Manufacturers. The literature presents many quotations of what users have to say about the product. Title of the booklet is "Why We Use Battery-Electric Industrial Trucks." A three-page section is devoted to the power source, batteries, chargers, motors and controls. A variety of safety features are listed. In-



terested persons can obtain copies by checking No. 6951 on the coupon and mailing to this publication.

RECEIVES \$100 PRIZE

TIFTON, GA.—Bobby Summers of the Tifton, Ga., high school chapter of Future Farmers of America, has been presented a \$100 state prize for outstanding achievement in soil and water management. His work included fertilization.

Books on Soils and Soil Management

SOILS AND FERTILIZERS—Fourth Edition

Firman E. Bear

Covers in detail: soil chemicals, important soil elements such as nitrogen, phosphorus, calcium; yield prospects of crop plants; moisture control, soil management; mechanical operations; soil conservation; organic matter maintenance. New facts, accurate figures. 66 illustrations, 420 pages \$6.00

SOIL FERTILITY (1955)

C. E. Millar, Professor Emeritus of Soil Science, Michigan State College

A fundamental treatment of the principles of fertility in the soil, with major emphasis on the plant itself. Relevant aspects of soil chemistry, soil physics, soil microbiology and plant physiology from viewpoint of their influence on plant growth. Each major plant food element and the more important micro-nutrients fully treated with respect to supply in the soil, sources and amounts of additions, losses from the soil, functions in plant growth and plant symptoms of deficiency. Covers all sections, with considerable space to saline soils and soils of southern latitudes \$6.75

CHEMISTRY OF THE SOIL (1955)

Firman E. Bear

Presents a comprehensive picture of the chemical aspects of soils in relation to their development, present constitution and the uses to which they are put. Covers: chemical composition, soil, colloids, organic matter relationships, oxidation-reduction phenomena, acid, alkaline and saline soils, plant nutrition, nutrient fixation, trace element chemistry, root and soil relationships. Scientists engaged in soil research will find useful data directly applicable to their investigations. Food chemists, manufacturers and those manufacturing liming materials, fertilizers, soil conditioners, surfactants, wetting agents, insecticides, fungicides and other agricultural chemicals will gain new ideas for future product research and development. 384 pages \$8.75

SOIL PHYSICS—Third Edition (1956)

Dr. L. D. Baver, Director Experiment Station, Hawaiian Sugar Planters Association

This represents a considerable revision of the earlier versions and incorporates many ideas communicated to the author by soil scientists all over the world. Two new chapters on the principles of soil irrigation and drainage, discussion on soil puddling, effect of chemical soil conditions on soil structure, and recent contributions of the diffusion process in soil aeration, and information on hydraulic conductivity, soil moisture stress, and plant growth, the importance of compaction on soil tillage, and wind erosion processes. 489 pages \$7.75

SOILS AND SOIL MANAGEMENT

A. F. Gustafson

A complete study of soils; physical properties, soil, organicism, organic matter, relation of water, control of water, tillage, erosion, acidity and its control by liming, management of alkali soils, nitrogen and its importance to the farmer, production, conservation and utilization of farm manures, production and utilization of green manure crops; fertilizer materials and their effects on soils; crop rotations; fertilization and long-term maintenance of productivity of mineral soils. Published 1941. 424 pages, illustrated \$6.50

SOIL SCIENCE SIMPLIFIED

Helmut Kohnke

A concise textbook dealing with basic concepts of soils. Much useful information for students in agriculture, farmers, fertilizer salesmen, etc. 68 pages, paper bound \$1.00

IRRIGATED SOILS: Their Fertility and Management—New 1954—Second Edition

D. W. Thorne and H. B. Peterson, Department of Agronomy, Utah State Agricultural College. Dr. Thorne is also Chief of Soils and Fertilizer Research Branch, Tennessee Valley Authority

An outstanding text dealing with the problems of irrigated regions. In addition to the chapters dealing with irrigation, the salt problem, reclamation of saline and alkali soils, there are chapters on maintaining organic matter in soil, minerals and plant growth, fertilizer elements and fertilizer materials, using fertilizers, soil management for general field and feeding crops, for fruit, vegetable and specialty crops... \$7.00

THE RESPONSE OF CROPS AND SOILS TO FERTILIZERS AND MANURES (1954)

W. B. Andrews

A new book, with special reference to Anhydrous Ammonia and other sources of nitrogen in liquid form. Deals also with legumes as a source of soil nitrogen, and the uncertainty of green manures; the response of soil to phosphorus, potash and soda; the effect of fertilizers on yield and feeding value of hay and pasture crops. 468 pages, 19 chapters, 89 illustrations \$6.00

CHEMICALS, HUMUS AND THE SOIL

Donald P. Hopkins

The theme of the book is the necessity of chemical fertilizers to maintain the fertility of the soil. It has concise information on which soil conditions and which chemical fertilizers are most suited for special crops and vegetables. Space is devoted to cereal crops, barley, wheat, oats and rye; to roots and tubers, sugar beets, potatoes, carrots, parsnips and turnips; to vegetable crops, beans, peas, alfalfa, lupines; to grasses and clovers; to onions, flax, kale, cabbages, lettuce, tomatoes, celery, cauliflower and fruits. It clarifies the relationship of manures, compost and chemicals as fertilizers and points out how chemicals should be used to obtain the best results. Its philosophical soundness and logic should do much to avert the confusion of thought introduced by the advocates of compost and manure as against the use of chemical fertilizers..... \$8.50

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Organizing the Owner-Manager's Job

By SUMNER D. CHARM

Executive Director
Sumner D. Charm and Associates
Boston, Mass.

Can you say in all honesty that you have organized your own job? That, as the owner-manager of a small manufacturing concern, you are doing the chores that are the boss's—leaving to others the chores that are theirs? Don't answer this hastily: Think it over. In fact, keep thinking about it while you are reading about Harvey Winston.

For you are about to witness the re-education of a fellow executive. For some time Harvey Winston, like you the head of a small manufacturing concern, had been secretly worried. No, basically there was not much wrong with his company. It was a pretty solid, pretty successful firm. Yet—something was wrong. But what?

● **Executive Soul-Searching.** Finally, he decided he needed an answer to that nagging question. To provide it, he called in a well qualified consultant and to him he unburdened his secret uneasiness.

"I just don't understand it," he told Quentin Emerich, "when I took over this organization from my father five years ago I was able to run it. I mean during the day. Now I've got to lug my heavy brief case home with me just about every night. I don't know what's wrong: Can you do a quick check and find out?"

Cracking Down on the Boss

Emerich promised he would try to find out. But he warned his client not to expect too much. "You can't always find even the root of the trouble in a couple of days," he said. Yet, within two days he was able to ferret out the major cause of Harvey Winston's plight.

"I've been watching you," Emerich explained, "and I've watched you operate. And I know where the trouble lies."

"Where?"

"Bluntly, with you. As I see it, Mr. Winston, you waste too much time on details, you spend too little time doing your job: managing. Don't feel badly; all too many men in comparable positions make the same mistake. But you can do something about it, right now."

● **An Executive Turns Sleuth.** Harvey Winston was stunned, of course, but he also wanted to know what the consultant thought could be done to change his method of operation.

"First, identify the problem. Then apply the lessons."

"How do I do it, Mr. Emerich?"

"Try something unorthodox," the consultant told him. "During the next few weeks, why don't you talk to some of your business acquaintances, men who run other small manufacturing concerns? Ask them about how they run their organizations. You will learn some very interesting things."

What's Wrong with Bosses

Harvey Winston agreed to follow the consultant's advice. "But," he wanted to know, "are there any general thoughts you want to leave with me?"

The consultant nodded. "These: A business, particularly a small business, is a creative work. Don't smile, it is. It's in its way as creative as a song, a painting, a statue. The difference is this: that the work of art is finished at some point. But an active business reaches no such point of completion. And the creator—you, the business-man—must forever keep on creating and improving his creation. He sees the objective ahead and moves toward it without letting himself be distracted by minor details. Most of all, he must organize his time so that he can do the important, truly managerial jobs."

● **Executive Time Killers.** Methodically, during the weeks following his

SUMMARY

Many ingredients combine to make a man a successful owner-manager of a small manufacturing concern. But one of them—and one that is often overlooked—is self-discipline. The self-discipline which makes you do some chores you dislike. The self-discipline which makes you organize your job.

Many of your opposite numbers in other manufacturing organizations proudly point to the hard work which is their lot every day. And, of course, most executives do have to work hard. But—and this is the important question—are they working hard at the right things? Unfortunately, in many cases, the answer is a resounding No. Why is that so? Probably they lack the self-discipline to organize their jobs: to perform the hard job of managing. Instead, as you will see, they are Detail-Huggers, Conference Callers, Dream Merchants, Kibitzers and Overflowing-Desk Men.

There is a solution to this problem—but it requires some self-discipline. At least Harvey Winston, about whom you will read in these columns, found it. So (should you need it) can you. (This article was prepared with the cooperation of the Small Business Administration.)

talk with the consultant, Harvey Winston invited friends and acquaintances, men like himself, to lunches and dinners. One of these men, Barney Baker, was an old friend of his, and so Harvey could be quite direct with him.

"Barney," he said, "tell me this: How do you spend your day?"

Barney Baker's face turned a rich, resplendent purple. "You know very well how I spend it," he managed to say after finally regaining his composure. "I spend it working. I have no trouble-killing the day."

What Barney didn't know was that other executives had answered the same question (though phrased differently) in the same way.

"Yes, I understand that," Harvey persisted. "But—bear with me—working on what?"

"Are you feeling all right, Harvey? Oh, okay. Let me see. Well, in the morning I stop by the mail room and get mail and open it, and—"

Harvey interrupted. "You get your own mail and open it?"

"Sure, what's wrong with that? Then I may drop in on one or two departments just to see what's going on, and perhaps chat with the supervisor. And then there are people to see—"

"What kind of people?"

"Oh, you know: salesmen, and people from civic organizations who drop in for a chat, and of course, I always keep my door open to my staff. And I try to keep on top of all the small details that crop up in a day. Let me tell you this: I can kill a day without any trouble at all."

Killing the day, as Harvey had already found, seemed to be a favorite hobby of a number of executives. Already, Harvey was beginning to learn something about some of his fellow executives. And that lesson he put down in the form of a list of the types of men he had met. He called it:

The Busy, Busy Bosses

The Detail-Hugger: Hardly a day passes without his presence distracting the mail room clerk ("Have we got enough stamps?"), the secretaries ("How do you put a new ribbon on that new machine?"), the cafeteria food supervisor ("How long does it take to fix cole slaw?"). He is also terribly interested in the amount of string used for packages, and the amount of gas used by the company truck.

The Conference Caller: This type won't let any one order a dozen paper cups without the trappings of a time-killing executive summit meeting. He likes to hear his own voice, even if no one else does.

The Dream Merchant: He kills time dreaming (and worse luck, talking) about what he's going to do tomorrow, and so never has time to do anything today.

The Kibitzer: Killing his day is no problem. He just does it by looking over everybody's shoulder, and dropping in on departments "just to see how things are going." (They're going fine—when he's not around.)

The One-Track Manager: Charlie One-Track loves business statistics. Figures fascinate him, and he kills the day poring over them while the fate of the factory hangs in the balance.

The Overflowing-Desk Man: Killing the day is no problem for this man. He wastes time signing innumerable notes, memos, requisitions and other inter-office trivia.

The Genius: He knows everybody's job so much better than the man doing it that he spends most of his time managing everyone's time and effort... but never his own.

The Open Door Man: My door (this executive announces proudly) is open to everybody at all times. The idea is fine, but the result is disastrous: His employees take up most of his day with trivial questions that they could figure out for themselves if the boss hadn't given them a green light to kill his day.

Bosses at Work

Naturally, not all the men Harvey Winston met fell into the Busy-Busy Bosses category. Quite a few were able managers, who not only organized their companies well but—typically—organized their own work. They spent most of their time managing, controlling, planning and directing the work of their immediate subordinates.

However, he found this, too, to be true: Every man with an opportunity to do so spends his time on that which interests him most.

● **Pleasure Before Business.** A typical example of that attitude Harvey found in genial, easy-going J. K. Jerome, president of another small manufacturing company. He found him just returning from a selling trip.

"J.K.," Harvey asked him, "why do you hit the road yourself? You've got a good sales staff."

"It's like this, Harvey," J.K. told him, "I like to sell. Used to be a salesman, you know, in the old days. Pretty good at it, too. Can't get over it, I guess. Only trouble is, when I get back my desk overflows—just look at all these papers—and there are a dozen decisions that I've got to make. A lot of things accumulate in two weeks."

Harvey Winston was already a wiser man than he had been before he started his rounds of informal talks with fellow executives. So he said, "But if problems pile up and decisions are delayed because—well, because you like to imagine you're still a salesman, doesn't that hurt your organization?"

This was as good an exit line as any, but as Harvey got to the door, he looked around. J.K.'s face bore a very unhappy, very puzzled expression.

● **"I Like It."** Considerably enlightened, Harvey next met with the head of a small company whose product is in demand only seasonally. Harvey knew that if the proprietor wanted to, he could easily move into a closely allied field with a stable, year-round market. Well, why didn't he? When Harvey

asked him that question, Walter Olsen smiled. "If I went into some other line," he said, "I might make more money, but I like what I'm doing."

That reply set Harvey to thinking. Was it wrong to take that attitude toward business? Did it necessarily lead to failure? He remembered two friends of his, electronics engineers both of them. When they were young, they dreamed of owning their own business, but when they left college they first got jobs in industry. Later on, however, they made their dream come true. Giving up their good positions, they opened up an electronics firm.

They had hard going the first year, harder the next. During the third year, one of the young men took a job so he could help keep the business afloat. That was a few years ago. Today, their company is housed in a small, but modern building, and its sales are close to \$3 million a year. What had made them stick it out? Once during the grey, grim days Harvey had asked that question. The answer was prompt and firm. "We enjoy what we are doing," they told him.

A New Look at an Old Problem

But, trying to remember the task the consultant had set him, Harvey decided to plunge into a reappraisal of his own situation. Of course, basically he liked what he was doing. So the trouble had to be elsewhere. But exactly—where? Thinking back over his interviews with fellow executives, Harvey realized that most of those men "killed the day" doing all the things they enjoyed doing. Perhaps this was what was wrong: They neglected those duties which they disliked, but which nevertheless had to be done.

● **An Executive Re-Appraises Himself.** So now, mentally, Harvey surveyed his own method of killing the day. Did he spend enough time planning the future course of his business? Did he spend enough time thinking about tomorrow? Did he spend enough time making certain that his top men carried out his policies and instructions? The answer, now that he thought about it, was definitely NO.

On the other hand, did he spend too much time worrying about details? Did he spend too much time talking with some of the salesmen? Did he spend too much time on non-top-management chores such as signing requisitions for small purchases, or trying to supervise the purchase of tools and equipment for his men? The answer, now that he thought about it, was definitely YES.

It occurred to Harvey Winston that he was being unfair to his people if he tried to do too much—of the wrong things. It was his job to manage, to make sure that the factory prospered and offered steady employment to those whom he had hired.

As a result of this new insight, Harvey Winston wrote himself a memo, possibly the most important memo of his business career.

Killing the Day That Kills

What Harvey Winston wrote in that memo was a simple blueprint for executive thought-and-action. It read like this:

(1) **Your business is more complex than when it started.** It has gone beyond your favored specialty. It now needs skills and abilities others must provide. As an owner-manager, with limited capital, you have to wear many hats, but you can get better results by allocating responsibility as much as possible whenever possible to the capable members of your organization. Let them do their job; you do your own.

(2) **Your job is to see your business as a whole.** Their job is to provide special knowledge in your firm's functional components: financing, marketing, production, control and staffing.

(3) Your function is to supply top policy. Theirs is to do their own individual jobs. They know them better than you do.

(4) Your purpose is to lead, inspire, direct. Theirs is to supply the technical know-how to transform your ideas into a final product.

In addition to these four points, Harvey also put down some other thoughts: Never stop re-evaluating your own job. That means that you must ask yourself daily whether you are doing all you should be doing, whether you are neglecting some chores you should be doing, whether you are doing things you should leave to others to do. Finally, always be certain that you are keeping up with developments in your field, so that your firm can keep up with—or can forge ahead of—the field.

● **Charting the Day.** On a separate sheet of paper, Harvey made some more notations. To any good owner-manager of a small manufacturing organization, they will make good sense. Here is what they were:

(1) Each day set aside some time to think. Close your door, and make sure no one interrupts you. Sometimes you may need only a few minutes, at other times several hours. That's up to you.

(2) Each day set aside some time to make plans for the company's future.

(3) Each day make certain that you have taken care of the important things before you tackle anything else. For instance, if the company is about to market a new product, be sure that you stay on top of developments; and do not be sidetracked by casual callers or discussions about new stationery.

(4) Each day be sure to do all the jobs you should be doing, including that unpleasant task of looking at the company books. You want to be aware of your costs constantly, and of the balance and equilibrium of your cash position, your general accounts, your commitments, your general financial situation. Because it is your own money that is involved, you will find that it takes a special effort to be objective: but be objective. To do things you dislike, means that you have to discipline yourself. Do it. Your company's fate may depend on it.

(5) Each day do some "on-the-job coaching." That means training your executives to be executives. Thus when the production manager wants to look over new people for his department, he should be able to hire them—with the help of the employment manager—without going to higher authority.

(6) Each day don't forget that you are working with friends, both in and out of the company. A smile and a pleasant word often accomplish what seems impossible.

(7) Each day, at the end of the day, think about the chores you performed. Ask yourself: Could I have left some of them to others? Were any things I should have taken care of left undone? How did I stack up today against my own rules of management conduct?

● **Patting the Boss on the Back.** A day or so later, Harvey called the consultant who had started it all, asked him to drop by. The consultant did. Harvey handed him the memo and the other notations. "Think this will do it?" he asked with a smile.

The consultant read Harvey's guide-for-self-management with considerable interest. Finally, he said, "If you really adhere to this program, you'll not only have organized your job, you'll have time to go on a long vacation. And that brief case of yours will stay at the office most of the time."

Harvey nodded in agreement. "As you were saying the other day," he reminded the consultant, "a business, particularly a small business, is a creative work. But I realize now that no creative work ever comes into existence, or survives, if the creator lacks discipline."

SCHOENFELD AND MCGILLICUDDY



By AL P. NELSON
Croplife Special Writer

One of the joys of Oscar Schoenfeld's life was to get to work mornings ahead of anyone else. It made him feel superior in a sense, as though he had something nobody else in the organization had—the ability to get started on the day's work ahead of schedule. Oscar liked to check the wastebaskets in the office to see if anyone was throwing away rubber bands, paper clips, slightly used sheets of carbon paper or old envelopes which could be used for scratch paper.

He also liked to snoop through the warehouse to see if the men had put all the brooms and floor push brushes in place, whether they had piled fertilizer and feed sacks carelessly, whether they had failed to clean the cobwebs off the walls. He also checked the men's room to see if any of those terrible girly-girly magazines reposed in the wastebasket there. Oscar was always shocked to see how little clothing some of these girls wore and how robustly developed some of them were.

Clicking his tongue in criticism of such publishing candor as he thumbed through the magazines, Oscar felt his face get red and an uneasy feeling stirring within him. What kind of employees did Pat and he have, Oscar reflected, who would buy and look at such magazines? Then, puritanically, and with back straight as a ramrod and with lips set, he would carry the magazines to the trash burner, throw them in, brush his hands, light a match and burn them. He would stand there like a satisfied censor as he saw the flames redden, then blacken the pages on which the pictures of the voluptuous sirens were printed.

This September morning as Oscar opened the office door, his keen grey eyes darted here and there trying to see the entire interior in one glance. There wasn't a thing to criticize as yet, and this made him more suspicious than usual. He was not content until he could find two or three things wrong to complain about.

At this moment, an automobile horn blew loudly. Oscar frowned, went to the door and opened it.

"Hey, Oscar, give me a lift with this contraption."

It was wiry, tobacco chewing Alex Harmon, the local carpenter who always carried a big flat sided carpenter's pencil behind his right ear.

On the back of the light truck which Alex owned was a wooden rack about six feet high, including four legs. The rack had three rows of slots, and the entire unit was stained a light mahogany.

"Ach, what's that?" Oscar asked, and before Alex could reply, he continued. "We don't want that!"

Alex was no one to hold his temper or use tact. "Listen, Deutscher," he barked. "Your partner ordered this from me and told me to hurry up and make it. I put aside a lot of other jobs to get it done. Now you stand and argue with me. Got all your buttons this morning?"

"You bet I got my buttons," Oscar snapped. "I got more buttons than lots of other people around this place. If Pat ordered this let him help you."

"Why, you—" began Alex, then kept the rest of his thought to himself. "Okay, if that's the way you feel, I'll just unload this display rack myself outside and charge you guys another \$5 for inconvenience."

"You try and collect," Oscar thun-

dered. "And see how far you get."

"You'll pay me, or I'll grab a couple bags of fertilizer from the warehouse right now as interest and hold them till I get your check."

Alex was furious as he struggled to get the rack off the truck himself.

No sooner did he have it unloaded than Pat drove up in a battered 1956 car. He eased his long frame out and smiled.

"Ah, Alex, you got it done. That's what I call good service. I appreciate it."

Alex pouted a little. "Well, now, that's more like the treatment I like. This guy Oscar don't want any part of this display unit. He says he won't pay for it. How the devil do you get along with a crabby guy like that? Why he's worse than my mother-in-law, and she is terrible."

Pat turned to the stubborn Oscar who stood like an accusing judge. "Oscar, you shouldn't treat people like that."

Oscar ignored the statement. "Ach, what is that?" he said. "And it looks like it was made from scrap lumber. And it isn't stained very good."

Alex Harmon's face got red and his chew of tobacco bulged in his cheek. "Why, you insultin' stuffed shirt. I'll have you know I do nothin' but quality work and use good lumber. I—"

"Alex," said Pat patiently, although his eyes had a steely look. "Why don't you go? I'll see that the bill is paid. Oscar and I can have this out by ourselves."

"Okay, I don't envy you!" Alex said. Giving Oscar a withering look he got into his truck, started the engine and took off in a spurt of speed that cascaded dirt and gravel from the tires back onto Oscar.

When the dust had died down and Oscar had brushed the dirt from his clothes and coughed the dirt out of his lungs, Pat said, "Oscar, this rack is designed as a post-office for the convenience of our customers."

"Postoffice for customers!" echoed Oscar genuinely shocked. Too shocked to be angry, in fact. "Now we are takin' over the job of the U.S. Post-office department. McGillicuddy, are you light in the head from all your crazy ideas?"

"Farmers and their wives come to town to shop," Pat said patiently. "The husband goes to one store, the wife to another. Sometimes they can't find one another. They can come here and leave a note for anybody they want. I'll put alphabet numbers over each slot—big ones that they can see. And I have arranged for a display space at the bottom, wide enough to hold four bags of fertilizer. We'll put specials on display there and cash in on the increased traffic."

"Slots!" Oscar shouted. "You put that postoffice thing up and I will slip a collection notice in for every farmer that owes us. Messages you want to give them. Ach, I will gift them some. They can pay their bills, they can!"

"Oscar!" remonstrated Pat. "Can't you see this is a good will gesture and a needed service? No need for farm families to get crossed up signals when they use this postoffice. And it's free. It will build more store traffic and increase our chance of sales. No other merchant has this sort of thing, and—"

Tillie Mason, the plump ulcerish inclined bookkeeper opened the door

but stopped on the threshold as she heard Oscar and Pat arguing.

"Oh, they're at it again!" she said to herself. "That means I can get my second cup of coffee and another sweet roll over at the Slide Inn Restaurant. Oscar and Pat won't get talked out for another half hour."

Trade Winds From California

ORINDA, CAL.—Rieger's House and Garden is the name of a newly incorporated firm located at Orinda, and capitalized at \$75,000. The company furnishes garden supplies, including a variety of chemicals. William Rieger and John Santee are principal owners of the firm.

SANTA ROSA, CAL.—Charles M. Aliff has incorporated his Garden & Farm Supply Store, at 6287 Sonoma Highway, Santa Rosa, where he retails farm chemicals to home gardeners as well as ranch owners.

TAFT, CAL.—The Taft Nursery is the name of a new agricultural chemical retail outlet opened at 407 Harrison St., Taft, by Robert A. Barrett.

KNIGHTS LANDING, CAL.—Joseph Macedo and Joan S. Snowden, owners and founders of the Snowden & Macedo Dusters, Inc., have sold their interests in the firm to Milton B. Watts. The company offers a crop dusting service to farmers.

SAN LORENZO, CAL.—The Bill Jory Nursery in rapidly growing San Lorenzo has been incorporated with a capitalization of \$25,000. Principals in the firm include William Jory and Arnold E. Linden.

LAKE ISABELLA, CAL.—Edward S. Portukalian has opened a new garden and farm supply store, retailing farm chemicals and other products, on Starkey Drive in Lake Isabella.

HAYWARD, CAL.—The Shizu Okuda Nursery is expected to be opened at 25312 Saklan Rd., Hayward. Mr. Okuda is the principal owner.

CARMEL, CAL.—The Picadilly Nursery, owned by Stuart MacLachlan, has been sold to Charles W. Rogers. The nursery is located at Dolores St. and Ocean Ave.

RED BLUFF, CAL.—Roger L. Schenk has opened Roger's Nursery & Garden Shop at 735 Rio St., Red Bluff, to sell at retail various kinds of garden products, including chemicals.

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Planning a Second Store?

Make Sure Drawbacks Are Explored Before Extending Business Ventures

By Robert Stanley
Croplife Special Writer

Very few dealers exist who have not been planning to open a second store either in their present community or in another nearby. This maneuver takes a great deal more than the necessary capital—as many a man has found to his sorrow.

"Sure, it's a good move—it will give me better buying power—more profit—a better competitive advantage and a lot of other things," is an almost universal prediction we have heard many times.

This it may very well do—but again it may not. Consider these possibilities as they apply to the specific situation involved. They have been taken from thorough study of many such "second store" ventures. Some were successful but a great many were not. The latter conditions existed through failure to take into consideration and plan around all of the following factors:

● **Profit potential**—A realistic approach to the profit potential should always be taken. It took a long time to build one's present farm store into a profitable position. Chances are it will take many months to put over the second store unless a very profitable operating business is purchased.

During the time of growth, the second store losses must come from some place. Either the first store will have to carry the load for both stores or there will be a continuing drain on capital funds. At least a year should be allowed in the planning before the break even point can be reached. The advertising and promotional costs of putting over a second store will be a much heavier drain than on the present business.

The possibilities for an immediate profitable business are remote. Seldom can a new business be started and prove profitable from the very start. This applies particularly after the novelty of the first month or two has worn off. Many a "second store" has shown a profit for the first two months and then developed losses for the next five or six while a steady clientele was being built up.

● **Operating personnel**—Making certain that good employees are available before the store is ever opened is as much a must as providing sufficient capital. If the owner strips the parent store of its personnel then business there will suffer.

A good procedure is to start with a new staff entirely under the direction of a proven veteran employee from the staff of the original store.

It is never wise to take for granted that the kind of personnel needed will be available when the store is ready to open; these should be assured before that opening day.

● **Buying power**—There may be some small advantages in buying power which will open up from a two-store operation but the dealer usually finds these are far less than he imagined. The big advantages come with ten or more outlets where volume movement of goods can really be obtained. Unless a most unusual situation exists the buying advantages of two stores over one are vastly over-rated.

● **Management problems**—A "second store" operation should not be undertaken with the idea that one manager can handle both stores as well as he handles the existing business; it just isn't so. Running two stores will sap just about all of the energy any dealer can have if he attempts to do the complete job himself. The inevitable result is that neither is receiving proper management and both will suffer in the process.

One of our very first steps should

be the location of and hiring of a capable individual to completely manage and operate the second store with only major business decisions being undertaken by the owner. This individual may come from the present staff or from outside but he should be definitely available before any other plans are made.

● **Competitive situations** always deserve the closest of study. Those existing in the area or community into which the new store moves will have a great deal to do with the success or failure of the new venture.

Every such competitive situation requires particular skills and advantages. If the dealer has been successful in his present store he has learned to handle these skills and advantages well.

But the competitive situation where the second store is to be located may be entirely different and require unfamiliar techniques. A very close analysis of the difference between the two locations should definitely be made.

● **Buying habits and consumer desires in the area under consideration require close study.** If they are different than those where the dealer is now doing business separate inventory, merchandising and advertising procedures must be followed. A dealer cannot depend on those developed in his present spot being adaptable to the second.

One of the greatest mistakes in second store operation is going on the assumption that the same things which worked in the present location will be successful in the new spot. Only if all factors embracing buying habits and needs of customers in both areas are identical will this hold true.

● **Overhead costs of the new location** should be given detailed scrutiny. It is extremely doubtful that they will be identical to the present operation. That means that a given dollar volume of business in the new location will not produce the same net profit as it would in the original store.

No single factor in overhead should be overlooked in making this analysis and certainly nothing (not even the utility bill) should be taken for granted. To do so will present a misleading estimate of the profit potential in the second operation.

● **Future business conditions** where the second store is to be located must always be given close analysis. Never take for granted that a business boom condition within a given area will remain for any length of time into the future. It should also be carefully investigated as to whether or not the condition is one of "boom" or genuine "good business."

Another possibility should also be weighed—will the conditions which make it an enticing location bring other competitors into the area also? This can turn a very good location into a most unprofitable one should it occur.

● **Tax problems** always deserve consideration. Many a dealer has found creation of a second or third store on a most profitable basis resulted in the hoped-for sizeable increase in net income to himself. But with it came higher tax brackets and additional tax liabilities. Too often he emerged with no more profit after taxes to himself than he had on the original venture and it has even happened where less was the result.

With these should also go a close check into local and state taxes involved in the new location. They may prove far more than previously calculated using the present operator, as a basis. When that occurs any budget can be wrecked. There should

be no guess work about tax analysis with respect to any expansion plans by any feed dealer.

● **Warehousing facilities** should also be checked. Many of the new locations, for example, are so small as to allow practically nothing for ware-



By Emmet J. Hoffman
Croplife Marketing Editor

OVER THE COUNTER

The dealer's location, friendliness and reputation are important considerations when the farmer buys, it has been determined from a survey made by Kansas State University.

Charles Reed, agricultural economist at Kansas State, says that the survey included some 140 farmers in Lyon and Butler counties. About 70% of the farmers said they used some type of formula feed in their operations.

The study was aimed at determining why farmers did business with certain dealers and farmers' reasons for purchasing a particular brand.

The farmers gave a total of 178 reasons for trading with certain dealers. The decisions included the following responses: Location 38, friendship 33, prices 32, cooperatives 28 and quality of products 26.

Assuming the dealer has only limited control over quality and prices, the most important reasons therefore why these farmers bought from certain dealers were convenience of access and friendship.

Concerning the reasons for purchasing a particular brand, the farmers rate the dealer's reputation quite highly.

"In his operations, the farmer is, or should be, a rational buyer," Mr. Reed says. "Therefore, he would consider the factors which have a bearing upon the welfare of his business enterprise."

The farmers most frequently said prices, results, dealers and quality determined which brand they purchased. Of 119 reasons given for buying certain brands, 25 were for results, 22 for prices and 23 for quality.

Reputation of Dealer Cited

Another 24 answers indicated that certain brands were purchased because they were handled by specific dealers.

"In these cases, farmers had confidence their dealers would offer a good product at a reasonable price," Mr. Reed continues. "While this is not strictly considered a rational reason, since it doesn't deal with the product itself, it does tend to show how strongly the dealer's reputation enters into purchases."

Fourteen other reasons given included: Because other people use it, dealer facilities and delivery service. Eleven farmers could state no reason for their purchases.

"Out of the 119 responses, 72 could be considered rational because they relate to the farmer's experience with the product itself," Mr. Reed says.

Friendship and Reputation

Near the top among qualities that give a dealer a good reputation and make him known as a friendly individual is that of courteous treatment of the customer. This involves not only the manager and the customer, but also his sales staff and the customers' families, too.

house or stockroom needs if any reasonable store size is to be used.

This means an additional demand on present facilities to take care of the new location or provision of a third facility to handle the increased volume of both. This is an often unexpected cost factor better considered at the beginning of the planning.

The foregoing represent the more important considerations which the dealer should keep in mind when planning that second store venture. They will suggest others peculiar to the individual situation involved. Overlooking any one may mean the difference between success or failure in the new venture.

"It might be well to consider a courtesy code," said Donald J. Plaisance, National Cash Register Co., to dealers attending the Louisiana Seedsmen's Assn. convention. "A courtesy code, if followed by all employees, would unquestionably enhance the reputation of a dealer."

Mr. Plaisance states that such a code might include the following:

1. Say "good morning," "how do you do?" or give some other appropriate greeting as soon as possible after the customer enters the store.

2. Always address a customer by name, if you know the name. Salespeople who cultivate a memory for customers' names build a valuable asset for their employer and themselves.

3. Wait on customers in turn, unless those entitled to service first agree to let a late comer, who is in a hurry, be served ahead of them.

4. Be courteous when talking to customers or store employees. Never, of course, chastise an employee in the presence of a customer.

5. Carry on all conversation as quietly as possible. If for no other reason, chances are that the customer does not care to have everyone around knowing his business.

6. Do not smoke or use tobacco in any way while talking to a customer. Even though he, the customer, may be a smoker, the wise salesman at least waits until the customer makes the first move at smoking.

7. Thank customers sincerely for their purchases.

8. Bid every customer "good day" when he or she leaves.

A study made by Prof. Comish, University of Oregon, on the relative efficiency of 501 retail salespeople in representative lines of business, shows that most salespeople can greet and meet customers correctly. Handling them afterwards is more troublesome. About one-fourth of the salespeople need to improve their selling approaches; one-half ought to increase their knowledge of merchandise; about two-thirds should improve their ability to answer, effectively, common objections for not buying; and more than two-thirds need to know more about the methods used to close sales effectively.

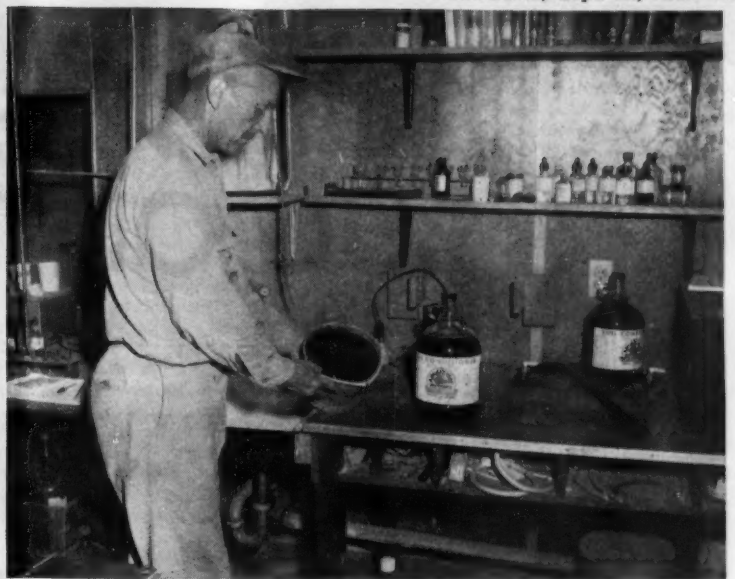
Fire Threatens Fertilizer In Idaho Warehouse

REUBENS, IDAHO — Fire early Aug. 28 destroyed a warehouse filled with 125,000 bu. dry peas and threatened to spread to another, filled with ammonium nitrate fertilizer.

Officials of the Albert Dickinson Co. said the loss, partly covered by insurance, would exceed \$100,000. They said the 50-year-old warehouse had become obsolete and probably wouldn't be rebuilt.



AN EMPLOYEE of the Hoover Soil Service, Gilman, Ill., is shown in the photo at left bagging fertilizer from the mixer. In the right photo, Roy Hoover, the president of the firm, is shown in his laboratory. The firm makes a liquid



soil conditioner and Mr. Hoover is showing a pot of soil into which he has poured some of the plant growing material. The firm also has a well-equipped soil testing laboratory and makes detailed tests for customers.

NON-ACID

(Continued from page 9)

trients, pH of soil and its relationship to the major elements—calcium and magnesium. The correlation of all major elements in the soil in proper ratio with the associated trace elements, which are empirical values found through trial and error in experimental fields, makes up a good soil.

"Some soils, only through good farming and soil management practices, can be made into productive land. Soil tests on sandy loams, silt loams, etc., may test differently for nitrates. These soils may start out in the early spring together in nitrate content and when sampled after the soil has warmed up in the summer there may be a wide difference in nitrate ion. The only inference to be drawn from this is the bacteria in one soil were more active than in the other."

Due to his belief that bacteria, en-

zymes and hormones are important elements in high producing fertilizers, Mr. Hoover makes a soil conditioner, "Aqua-Zyme" in liquid form. It can be used to topdress tomatoes, or it may be used in irrigation ditches in the water supply. It has an odor control feature which makes it valuable for canneries, and in sewage and septic tank problems, Mr. Hoover says.

For the use of salesmen and customers, Mr. Hoover has made up a chart showing the plant references for soil acidity or alkalinity covering the optimum pH range of 52 plants. This chart is of great aid to salesmen and is very interesting to numerous customers, Mr. Hoover reports.

A brochure issued by the company also gives the elements needed for plant growth. A percentage chart of these elements is also given, along with the special role each plays in plant development.

RENTALS

(Continued from page 9)

L. B. says that some dealers who started this practice have gained nothing but headaches for their trouble.

"We never appreciated anything that was given to us," he said, "and neither does any other farmer. If you charge a reasonable price for a service, customers will not object, and they will take better care of the equipment."

The company started out to sell fertilizers only, but have gradually added insecticides. Many farmers passing the plant would stop and try to buy insecticides, so finally the partners started stocking it. Now the sale of insecticides is rising rapidly, and L. B. says they may soon start selling cotton defoliant.

In trying to analyze the reasons for the quick growth of the company, L. B. listed the following:

1. Being farmers themselves, other farmers seem to respect their judgement. All fertilizers are tried out on the Jones' cotton and the results carefully noted. If they have used too much or too little, this information is passed on to their customers.

2. By learning all they can about fertilizers from salesmen, magazines, bulletins and by experience, they know what to recommend.

"We've already got a living from our farming," says L. B. "So we don't make false claims just to get a few extra sales. We don't recommend

heavy fertilization of dryland cotton, because in a 17-in. rainfall there is not enough moisture to utilize it. We try to sell it only where it will pay off."

3. The Jones' do a lot of country driving, and always notice crops along the road. If a field needs nitrogen or phosphorus, they may stop at the farm and make a sale.

4. Doing things on a big scale. "It doesn't take but one man to drive a four-row rig," said L. B., "and he gets twice as much done as on a small one. Also a 320 acre field can be covered much quicker than four or five little ones."

5. Using drivers who know farming and machinery. Some of the field hands at the farm are common laborer types, but those spreading fertilizer are intelligent, reliable and know how to get along with farmers.

6. "We cut out the middle man," said L. B., "by hauling fertilizer direct from the plant. Also by handling everything on a large scale we have picked up some nice accounts in other counties. A man wanting a large field treated is usually in a hurry. We can send three or four rigs if necessary and get the job done in a short time. This has enabled us to get ahead of some of the small dealers."

7. Keeping in close contact with farmers and their problems. If the cotton worm moths start flying, L. B. and his father know it's time to lay in a supply of insecticides.

FARM SERVICE DATA

EXTENSION SERVICE REPORTS

The South can be made into a pasture paradise, says W. R. Thompson, Mississippi extension agronomist.

"It will take lots of fertilizer, good weed control and good management," he stated.

"Pasture fertilization offers the greatest opportunity for agricultural expansion in the South, if it is followed with good management of both pastures and livestock."

Mr. Thompson recommends high fertilization of winter grazing. On land where phosphate and potash are needed, he suggests 600 lb. of a high analysis fertilizer and 50 lb. of nitrogen either at planting time or top-dressed.

On clover pastures outside the delta, the recommendation is 500 lb. of phosphate and 150 to 200 lb. of muriate of potash per acre.

"If you are afraid of growing a lot of clover because of bloat, go in October with a sod seeder and plant 100 lb. of oats or wheat or 25 lb. of ryegrass with the clover. Or you can mix the ryegrass and cereals together," he stated. "This will help control the bloat problem and is also a good grazing mixture."

"The secret of good pasture fertilization is to put out enough to start with and then fertilize every year to keep up the fertility level of the soil."

★

A new series of experiments at the University of California's Hopland Field Station will test the effect of simulated grazing on range forage grasses fertilized with different rates of nitrogen.

Individual stands of such species as harding-grass, soft chess, and medusa head will be given different rates of fertilization. Some plots will be clipped often, to simulate intensive grazing; others will be clipped only occasionally, or at the end of the season, to simulate light or deferred use. Total production, seed production, nutrient uptake, root development, and quality of feed produced will be checked in the different plots.

Milton B. Jones, station agronomist, says the information will help tell how efficiently fertilizer is used

by different species, and how pastures can be grazed and fertilized to favor the growth of such desirable species as harding-grass and soft chess. The study may also produce information that will lead to better controls for such undesirable weedy species as medusa head.

Mr. Jones says answers to the following questions will be sought in the tests: What is the effect on total production and feed quality of clipping soft chess, or other species, during the growing season? Is the response of the grass to fertilization changed by the number of clippings? How is fertilizer carry-over into the following year affected by the clipping treatments? What is the relationship between clipping-fertilization management and root growth? Do the treatments affect seed production?

As rangelands are used more intensively, Mr. Jones points out, such information will become important in maintaining the nation's food supply.

★

Fertilization of pastures is a practical means of increasing the carrying capacity of pastures without increasing the acreage, according to L. A. Jensen, North Dakota Agricultural College extension agronomist.

As an example, the Baeverstads, H. B., Elmer and H. B.'s son-in-law, Harvey Johnstone, applied about 150 lb. per acre of 33½-0-0 fertilizer to 90 acres to pasture early last spring.

They estimate that grass production is up by at least 50%, and it may be nearer to 100%. Fifty cows with the calves and 15 head of heifers have had ample grazing.

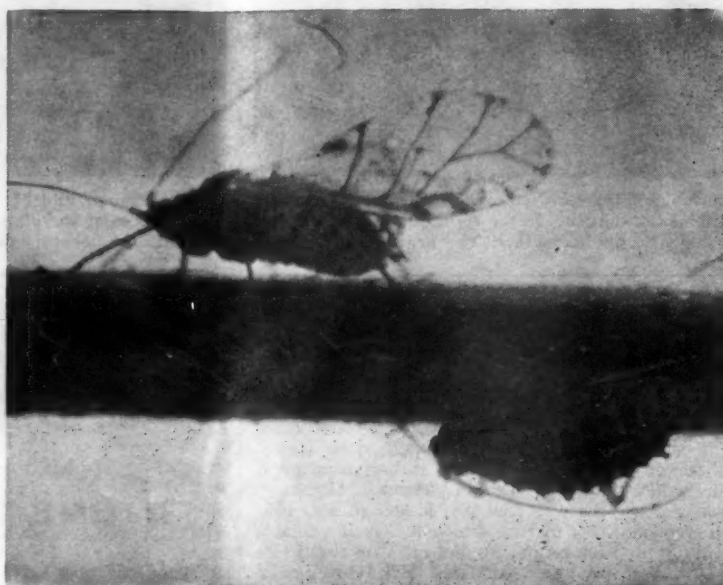
Mr. Jensen adds that many farmers are finding another of the Baeverstad Stock Farm's pasture practices profitable, that of seeding supplemental pasture for late July and August grazing.

The Baeverstads seeded 10 acres of Piper sudan grass for supplemental late pasture. It is now 4 ft. tall and the cattle have been turned into it.

Purebred Polled Hereford cattle are produced on the 13,000 acre Baeverstad farm unit.

BUG OF THE WEEK

Spotted Alfalfa Aphid



How to Identify

This important pest is a small, pale yellow or grayish insect, with from four to six conspicuous rows of dark spots on the back and with "smoky" areas along the wing veins. The illustration above, greatly enlarged, shows both the winged and wingless forms of the spotted alfalfa aphid (*Therioaphis maculata*). When first noted in 1954, it was confused with the yellow clover aphid which has been known for years as a pest of clover in the eastern states. Closer investigation disclosed the fact that the pest is the spotted aphid.

Habits of the Aphid

Peculiarly, the spotted alfalfa aphid can both lay eggs and produce living young. In northern climates, the aphid overwinters in the egg stage and in the spring these eggs hatch into females. These females can produce living young without mating. Generation after generation during the summer produces only these living young, some of which have wings which enable them to seek new food sources. Toward the fall of the year, both males and females are produced. They mate to produce eggs which overwinter and begin the cycle all over again.

Damage Done by Pest

Its rapid spread since being first reported in New Mexico in 1954, has caused authorities to consider this pest as a "threat to all alfalfa-producing areas of the U.S." It attacks the lower leaves of the alfalfa plant, feeding on the bottom

sides of these leaves. Young aphids, produced at the rate of from 2 to 5 a day, kill these lower leaves by their sucking. The pest moves up the stem to upper leaves, ruining the plant as it goes along. Its sticky secretion which coats both leaves and stems, not only acts as a medium for fungi, but reduces the quality of the hay, as well. The sticky honeydew clogs up baling machinery badly.

Control of Spotted Alfalfa Aphid

Both natural control with predators and use of insecticides have been recommended in various areas. Predators thus far have been completely unable to cope with the fast build-up and destructive propensities of the aphid. Thus the use of insecticides must provide an answer. Emphasis has been laid on both timing and application techniques for spray and dust treatments. Successful results have been had from both airplane and ground equipment. Extra care must be taken in thorough application, since the aphids congregate on the under-side of leaves. It is also emphasized that treatment of individual fields is not sufficient, since the winged forms of the pest migrate widely and reproduce rapidly. Cooperation between growers in an area is desired so that all infested fields are treated. In order to know when to apply insecticides for optimum results, careful inspection of fields should be made at least three times a week. Local authorities should be consulted as to the kinds and amounts of pesticides that can be used without leaving illegal amounts of residue at harvest.

Illustration of Spotted Alfalfa Aphid furnished Croplife through courtesy of the University of California.

Fertilizer Salesmen Urged to Sell Profits, Not Prices to Customers

By A. P. GATES*

General Sales Manager
Virginia-Carolina Chemical Co.
Richmond, Va.

ON A TYPICAL Monday morning you will step into your automobile and begin a day of sales calls. You will probably be making these calls for one of three reasons:

1. Routine call on a regular customer.

2. Prospecting for a new customer.

3. Credit or collection work.

My remarks are primarily concerned with the sales calls and quite logically we can ask the question, "What Are We Selling?" What is it that you are trying to accomplish? Why have you gone to see that customer?

At the outset, let's examine one very important statement, "Nothing happens until somebody buys something." It is estimated that the average industrial salesman keeps about 31 factory workers busy. The salesman is the key man in our economy right now. You fertilizer salesmen are the key men in the fertilizer economy. And yet, I have heard it repeated over and over again—poor salesmanship has cost the fertilizer industry millions of dollars.

Sales and/or marketing problems, opportunities and responsibilities in 1960 will be a continuation of 1959, only more so. More so because every year the fertilizer business gets a little more competitive. More so because now and in the foreseeable future the emphasis in the fertilizer business is on marketing. As a company's marketing goes, so goes the company.

It has been said, "We tend to become what we think about." In other words, if we are going to be salesmen, we must act like salesmen, think like salesmen and know what we are selling when we stand up to face the customer.

We all look upon selling as a profession. The word profession denotes an art or skill—and yet, we must go back to our subject, "What Are We Selling?" Is it price? Sometimes it certainly appears so, but it quite obviously doesn't take any skill to sell on price. We are apparently losing sight of a very important concept about the fertilizer business: we have a product that has a one-time use—the farmer can return at least \$3 for each \$1 invested—he is only using about one half of the fertilizer that he ought to be using.

Look at those three simple facts. What industry has any better opportunity than the fertilizer industry? And yet, salesmen and sales managers are constantly spending the major portion of their day in dealing with one thorny problem—that's price. Unfortunately, our industry is over-produced at present and this problem of price is a result of the oldest economic law—the law of supply and demand. However, there is real encouragement when we examine the results from Hoke County, North Carolina, and the soil fertility campaigns conducted in other states last year. The reason that we should be encouraged is that we are getting down to the nut-cracking in this problem in that we are beginning to sell a service and not just a product.

First, what are we selling? We are selling something that everyone in business is interested in—namely, profit. Sure, we are selling nitrogen,

phosphate and potash—the state sees to it that the farmer is getting what he is paying for—but, we are selling something broader than that. We are selling the farmer profit. Profit, which in turn means better living for him and his family. If we want to talk about profit opportunities for the farmer, let's look at an interesting statement recently released from Purdue University. "It shows an average retail cost per pound of plant food sold in Indiana in 1958 to be only 8.4¢. This is equivalent to \$67.39 a ton of fertilizer.

"The average retail cost per pound of plant food in 1958 was actually 10.6% less than 1951 and 27.6% less than 1920. Furthermore, the cost of plant food has increased only 13.5% from the depths of the depression in 1933."

We have a real story to tell here, but are we using it?

A strong relationship has long existed between farm income and fertilizer usage. It used to be said, as farm income increases, fertilizer consumption increases, and when farm income drops, fertilizer use also drops. Some deviation to this relationship was apparent during the war years when periods of very high farm prices and fertilizer shortages existed. However, since 1951, this relationship does not seem to hold. Plant nutrient use has continued to increase even though net farm income has fluctuated over this period of time.

There are several explanations for this. One reason would probably be the emphasis placed on fertilization as a means of boosting yields and thereby lowering production costs. Another explanation is that the cost of fertilizer has increased far less than most other crop production items. This is especially true for farm labor costs, which have increased 421% in the past 40 years. Compared to an increase of 220% for livestock, 214% for farm machinery, 311% for taxes, but only 54% for fertilizer. Therefore, it is apparent why fertilizer has been utilized to an increasing degree to offset a shrinking labor force. Again, we repeat, we are not just selling nitrogen, phosphate and potash. We are selling profit to the farmer and to his family.

Second, our selling efforts are directed to trying to help our customers solve their problems through service. Much of good salesmanship depends upon the selling of suggestions as to what products will do for buyers rather than a stressing of a product's physical characteristics. For example, when you buy an automobile, you are not interested in compression ratio. You are purchasing the ride you will get or the prestige you will have. When your wife buys a piano for the living room, she is not interested in how it was constructed. She is primarily concerned with the tone it will give her. The same is true with fertilizer. The farmer really isn't interested in how this product was formulated. In a survey the National Plant Food Institute conducted in 1957, over half of all farmers missed questions pertaining to correction of deficiencies of potash and nitrogen. What the farmer really wants to know is will the fertilizer produce crops and in turn make him a profit.

Third, we are selling the farmer insurance with proper fertilization. The best protection a farmer has against falling prices and the cost-price squeeze is the use of recommended amounts of fertilizer along with other good farming practices

that lead to efficient production. Proper fertilization cuts unit cost of production. The more efficient, low cost producer is better able to compete in times of unfavorable prices. Not only is proper fertilization good insurance against unfavorable prices, but fertilizer is good insurance in case of drouth. Fertilizer helps crops make better use of moisture. Fertilizer simply helps crops make more efficient use of available moisture—it does not substitute for moisture as such. Expressed another way, we are selling benefits to the farmer.

Fourth, we are selling a scheme of new ideas to the farmer. The trend toward making the salesman a merchandising consultant is spreading to all areas of business. For example, restaurant owners expect coffee salesmen to show them how to make coffee. The business machine salesman tells the customer just how many business machines he needs and what he needs them for. Some salesmen just keep doctors informed of new drugs so they will prescribe the right product. The same thing is happening in the fertilizer industry. We are trying to sell the customer on how to take a soil sample but he in turn expects us to do this for him. We are trying to sell him on using test plots but he expects us to service these plots. We are trying to get North Carolina tobacco farmers to use fertilizers with a higher nitrate nitrogen, but for years they have relied on organics. We should try and employ what is known as the "marketing concept." In other words, we ought to be trying to provide the farmer with products and services that he needs and wants rather than just those that we want him to have. Successful companies over the past few years are those that have provided services and products that the public wanted rather than manufacturing a product first and then trying to create a market.

Fifth, we are selling ourselves and other companies. It has been said that a man is known by the company he keeps. Conversely, a company is known by the men it keeps. This is certainly one of the fundamentals of selling. When selling yourself, you have got to proceed in the spirit of being concerned with your customers' problems. Your approach will fall flat when it is insincere; people are quick to sense insincerity. A salesman can sell himself and gain more respect from his customer by knowing his product. It was with this in mind that the "Fertilizer Salesman's Handbook" was compiled by the National Plant Food Institute. It is the nearest thing to a product manual that the industry has and should be your "Bible." If we don't know our product, how can we be put in the category of salesmen—we become tourists traveling throughout the country. As we sell ourselves, we sell our company. We obtain customer acceptance for our company by aggressively merchandising and advertising its products.

Yes, we are selling many things

DUTCH ELM FIGHT

MINEOLA, N.Y.—Advance of Dutch elm disease in Nassau County has prompted county officials to engage an expert to advise county residents on how to save their ailing trees and to provide free inspection. Described as the "worst enemy of the beautiful shade trees of Long Island," Dutch elm disease can be controlled, according to T. H. Anderson, Mineola, tree expert engaged by Nassau County to organize a fight to save the trees. "We invite the cooperation of the villages, towns, cities, estate and home owners as well as nurserymen, garden clubs and arborists. The progress of this disease can be arrested," he assured the public.

Control of elm bark beetles, vector of the disease, was considered of first importance in the program.

—a better standard of living, public relations for our industry and a more prosperous country for our children. Obviously, some are doing a better job at selling these things than others. All of us can improve—the only ingredient we need for this is desire. Assuming we have the desire, I offer the following suggestions:

1. Trade heavily on the profit potential of fertilizers. Don't try and overdo it for you have a good story.

2. Talk in simple terms. Don't talk down to your customer, but don't make the mistake by assuming that he knows the answer.

3. Lend your support to local soil fertility campaign—these projects are like brushfires, ready to burst open all over. See to it that your customers get out to demonstration plots even if you have to take them.

4. Since the dealer is such an important "cog" in fertilizer sales, it is the duty of someone to train him. They need accounting training—sales training—and agronomic training. We won't work miracles over night, but neither will we solve the problem by sitting down and doing nothing.

5. Constantly strive to better understand your customer and your product.

CRICKET

(Continued from page 1)

country where Mormon crickets breed. As the crickets start massing for their annual move to range and crop land at lower levels, ground equipment or planes spread bait ahead of the migrating bands. This insecticidal baiting on less than 100,000 acres in the mountain breeding places has kept the cricket threat under control each year.

Surveys to determine numbers of both grasshoppers and Mormon cricket adults are made each fall in the West. From these surveys, workers locate potential infestations that require further observation in the spring.

Spring surveys in 1960 will show how many eggs survive the winter, and the areas where control work should be done.

amazing new discovery!

Now a new, low cost, stable, powerful lemon odor for masking pesticides, herbicides and fertilizers.

Write for free samples to:

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*The accompanying article was taken from Mr. Gates' speech at the Fertilizer Salesmen's School at North Carolina State College, Sept. 3-4.

AAI HEAD DECLARES . . .

Balance Between Supply, Demand for Nitrogen May be Nearer Than Expected

By S. C. Smith

Uvalde, Texas
President, Agricultural Ammonia Institute

THIS PAPER is to present the nitrogen picture as it appears at the end of the 1959 season. It has been a year of spot shortages, since there were times when the ammonia distributor, probably like many others, didn't know where the next ton was coming from. Could demand for anhydrous ammonia have caught up with supply in 1959?

My own experiences prompted some investigating to determine just when that critical point of balancing supply and demand for ammonia might be upon us.

A recent article in a trade journal in the oil and gas field indicated that supply and demand for nitrogen would meet about 1961. While I would not wish to dispute the assumptions of this author, it should be pointed out that his thesis is based on estimates of existing capacity of plants already announced. From our own experience this year, I could easily believe that demand has already caught up with supply. Certainly no excess supplies were left standing in railroad car pools during the first half of 1959.

Current ammonia production capacity is slightly more than 5 million tons annually, according to the United States Department of Commerce. This is equivalent to approximately 4,150,000 tons nitrogen. There were two new ammonia plants which started production the first of this year, bringing the total number in the U.S., including one in Puerto Rico, to 57. Current ammonia production capacity is 6% above that at the beginning of 1958, and without doubt capacity will be increased as necessary to meet demand.

It is interesting to note that the spectacular growth in synthetic ammonia capacity dates from the U.S. entry into World War II. Between 1942 and 1946, 10 synthetic ammonia plants were built, tripling the pre-war production capacity and raising total annual capacity to 1,500,000 tons. Expansion began again in 1950 with the outbreak of hostilities in Korea and a number of new plants were built.

Over-capacity was the tune by 1955, but gradual recognition of the worth of ammonia by farmers, induced by experiments in virtually every state and by promotional work, and by the Agricultural Ammonia Institute, soon took over and demand has approached near to productive capacity again.

The result has been that in the spring of 1959, many ammonia producing companies found themselves unable to satisfy demands for their product. This, however, was the problem of logistics and not so much of production. Since ammonia has been in ample supply, and since transport facilities have been increased by transport trucks and even river and ocean barges, many distributors have ceased to place the importance of a few years ago on storage. With small storage tanks, 6 and 8 thousand gallons, widely scattered, supply can become a problem in a year like we have just completed, even with the expanded and improved transportation facilities.

This year, weather conditions for preplant applications were just about ideal in every section from which I have heard except sugar cane and rice in Louisiana and Texas. In spite of these ideal conditions,

many farmers failed to buy, or maybe I should say many distributors failed to sell, preplant ammonia.

During the sidedressing season, three things caught up with us: equipment shortage, weather, and ammonia supply. Yet, I predict that over-all consumption this year will far outstrip the 577,000 tons of ammonia for direct application used last year. In fact, with just a little urging I would hazard a guess of 700,000 tons or more for the year just ended.

What then is the nitrogen picture for the future? Will the trend be continued upward and will ammonia for direct application hold its present position of approximately 25% of the total nitrogen used? Let us have a further look.

At the start of this discussion, I neglected to mention that I am not an agronomist. However, I do know that ammonia, when supplied adequately in conjunction with other plant foods, is getting results which many crop specialists five years ago would have thought impossible. Balanced fertility must be maintained. That is one of the strong planks in the institute's platform, but once that fertility level is reached, then we join the agronomists in feeling that nitrogen is the limiting factor in most cases—that ammonia can add more food to the nation's market basket, more dollars to our total agricultural economy, than any other modern farm innovation.

This, then, really is the nitrogen picture. It is a picture of sound promotional policies instituted and promulgated by the Agricultural Ammonia Institute. It is a picture of results, the best results which American farmers can get from any fertilizer investment. It is a picture of increasing acceptance of a basically sound product, and it is a marriage of American industrial know-how and American agricultural ingenuity. Ammonia properly handled, properly applied and in recommended amounts, can be a blue-chip investment all along the line.

Dollars for farmers tell the story. Increased yields of better quality, heavier grain, fewer mortgages, more of the better things of life—that's what is happening in American agriculture today as a result of the increasing use of ammonia.

At the root of success of ammonia is the fact that it makes farmers money. It's just as simple as that. It makes farmers money, and when a distributor loses sight of the fact that ammonia must make money for the farmer, then he'd better start looking for a new business, for that farmer will be looking for a new source of nitrogen.

Distributors can profit, too. Dollars for distributors are produced when customers are kept satisfied and when they, too, make money.

We have found that with the application of sound business principles, there are fewer credit risks in a farm service business than with most other retail businesses. Generally, farmers like to pay their bills on time. They are honest and straightforward and they like to be treated that way.

The ammonia distributor who has sensible policies of service and who uses good business practices has

time to go after new customers. I do not know of any ammonia distributor who believes he has reached anything like the end of his market. It is obviously possible to see several thousand acres from any spot in America's broad farmbelt. Let's assume for the sake of discussion that one can see 5,000 acres if he stands on top of his mail box. These 5,000 acres should be using an average of around 80 lb. nitrogen annually for about any kind of crop. That would be 250 tons of ammonia annually, and this 10 cars is not a bad start for any ammonia distributor.

The successful ammonia distributor is not a wild-eyed dreamer any more. He is a man who sells money-making service to his friends and neighbors; he is a member of civic organizations; he takes an active part in business affairs and is generally a solid citizen.

There are dollars for producers, too.

I do not hold with those who feel that the ammonia producer holds a club over the head of the ammonia industry. Neither do I agree that all producers prefer to upgrade ammonia and market the nitrogen in other forms. However, regardless of my feeling or that of any ammonia producer, farmer acceptance of ammonia for direct application will dictate the product trend. The year just completed is a pretty good indication of farmer acceptance. One other point in the producer picture is the fact that producers, unlike many distributors, seem to be interested in making a return on their investments.

Allied industries are also in line for ammonia profits. The manufacturers of machinery to apply ammonia and other plant foods have profited and will continue to profit as their ingenuity is applied. As better equipment is devised and sold, the ammonia business will expand further.

I do not mean to say that there are glaring deficiencies in equipment today. But I am convinced that nothing is as constant as change. I am not certain that I know what direction the improvements in applying machinery will take, but I do know that improvements will come and that the market for our product will keep the pace.

In a survey just completed by the Institute, one of the questions asked was whether distributors would expand their storage facilities and applying equipment for ammonia in 1960. Twenty-seven percent of those replying answered yes to that question.

Dollars for research will take the forms of grants, scholarships, and more tax dollars, some of which certainly should be felt in much-needed raises and expanded facilities for those connected with agricultural research, teaching and guidance. Along this line, I should like to touch for a moment on the need for college trained agricultural specialists. It is my understanding that there is a market for some 15,000 of these people every year and that American agricultural colleges are turning out only about 7,000. This obviously is a trend which must be reversed if American agricultural progress is to be continued. The agricultural revolution demands more knowledge in agriculture. That is basic. This is a problem to which all of us must address ourselves continuously.

One of the goals of all of us connected with American agriculture today must be a balanced American economy. This implies: (1) Adequate food and fiber for American consumers, (2) a broadening market for American farm products, (3) a virile and imaginative research team, and (4) an agricultural supply or service business which is aware of its responsibilities, and capable of giving this service which modern agriculture demands.

Only in comparatively recent years have the methods devised by scientific men been used widely in agriculture. This is changing, and it must change even more. Research into marketing, processing, and distribution has not kept pace in the past 25 years with research in production techniques.

The farmer, more than any other American businessman, is subject to pressures over which he has no control. This must be recognized. All of us look forward to the day when subsistence agriculture will be a thing of the past. I believe that day will come when agriculture is regarded as an industry which may need assistance in a spot here and there sometimes, but which basically is capable of standing on its own feet.

Perhaps I have strayed a bit afield from the nitrogen picture in some of my remarks, but economics, logic, business principles, and good common sense must be kept in mind if this new revolution in balanced fertility and increased nitrogen consumption is to do the job all of us expect of it.

In closing then, it is my hope that each person in the business will become an artist in his own field—painting with bold strokes and vivid colors to make the over-all picture of our industry even more attractive in the future than has been possible in the past.

Boll Weevil Controls Slow Fruiting, Entomologist Says

GREENWOOD, MISS. — Evidence exists that phosphorus poisons used to control boll weevils and other cotton pests have a tendency to slow fruiting, according to Dr. Marvin Merkl, entomologist in charge of cotton insect research, Delta Branch Experiment Station, Stoneville, Miss.

Dr. Merkl made this point in a talk before a large group of farmers recently at Four-Fifths Plantation near here. The talk was the climax of a cotton insect control field tour sponsored by the Farmers Supply Cooperative of Greenwood.

The tour's purpose was to demonstrate the effectiveness of a planned control program, with constant checks kept on infestations through the cooperative hiring of scouts to maintain counts.

Dr. Merkl pointed out the early tests indicated that the cotton treated with a toxaphene-DDT mixture developed the earliest bolls and the earliest maturing bolls.

BIG TOBACCO CROP

LOUISVILLE — The recently released federal department of agriculture tobacco report has increased prospects for the 1959 burley tobacco crop by 11 million pounds, to 499 million pounds, which is in line with private figures of tobacco men who annually figure the crop and who have contended that it will run right at 500 million pounds, for the eight-state burley growing area.

Research in the News

Popcorn may be a more profitable crop for Martin Scott than cotton. This year his 150 acres at Fulbright, Texas, will yield around 3,000 lb. per acre, which is much higher than yields last year.

Mr. Scott attributes this to more rainfall and heavy applications of fertilizer. This year he put down 200 lb. of 0-20-0 and \$5 to 40 lb. of anhydrous ammonia per acre. This was put on before planting, then later he sidedressed the middles with another 50 lb. of anhydrous ammonia.

On the first five acres harvested this year, the yield was 15,000 lb. of corn. Mr. Scott is the first popcorn grower in this area to harvest with a combine.

He is growing the corn under contract to the Red River Valley Popcorn Co. of Hugo, Okla.

A fertilizer spreader at work in the forest might be an unusual sight today, but a few years hence, forest fertilization might become an accepted practice.

Agronomists and foresters at Virginia Polytechnic Institute Agricultural Experiment Station are currently beginning a series of tests aimed at determining whether or not it will pay to fertilize forests, as it does to fertilize other crops.

W. W. Moschler, assistant agronomist at VPI, explains that the demand for forest products is on the increase, while the supply is decreasing. Generally, the better soil types grow timber in a shorter period of time than do poorer soils. The scientists are wondering if trees will grow faster on the poorer soils after liming and fertilization.

Several commercial fertilizer companies, commercial forest companies and private landowners also are interested in the question, and have furnished some of the land, materials and financial help needed to make the studies in forest fertilization.

The first test is in Orange County on an extremely poor soil. Three acres of land have been cleared of scrub hardwood and planted in loblolly pine. There are blocks of trees with no treatment, other than planting, blocks of trees which are limed, blocks that are fertilizer, and blocks which are both limed and fertilized. The researchers want to determine both short-term and long-term results—growth responses during the first few years, and after 15 or 20 years. Even now, only six months after planting, there is marked response to the lime and fertilizer of small growth like weeds and huckleberries. Whether this will be true of the pine seedlings remains to be seen.

Another test will be conducted in an established pine stand—perhaps one that is 10 to 15 years old and has a good stand of desirable trees, but which is too small for cutting. The scientists seek to determine if and how much growth can be speeded up, if the quality of the timber or pulp wood can be improved, and how much it will cost.

The fertilization of hardwoods will probably be a third experiment. Hardwoods take more minerals from soil than does pine, Mr. Moschler explains, and are more exacting than pine when it comes to soil fertility.

Many crops can be saved during periods of drouth by irrigation with brackish water, according to Dr. Donald J. Fieldhouse, department of horticulture, University of Delaware.

Such water is commonly avail-

able in Delaware where the sea has flooded into surface water sources or infiltrated into wells used for irrigation, Dr. Fieldhouse said.

When available, fresh water should be used for irrigation, but investigations by the Department's Agricultural Research Service have shown that many crops are tolerant and productive when irrigated with brackish water. Brackish water that is usable for crop production is one eighth to one tenth as salty as sea water.

Salt-tolerant crops include asparagus, spinach, garden beets, barley, sugar beets and cotton. In the medium-tolerant range are tomatoes, many plants of the cabbage family, sweet corn, lettuce, onions, rye, wheat, oats and soybeans. Non-tolerant plants include celery, radishes, green beans and field beans.

Cotton specialists predict two bales of cotton per acre on the Charles Williams farm in Crisp County, Georgia, which has been grown by extension service recommendations.

A cotton demonstration was held on the Williams farm in late August for the purpose of explaining the cotton program to the farmers attending. Goodwin Nix, county agent, said the crop looked like the best cotton he had seen in the county.

Mr. Williams has grown 25 acres of cotton, which have been sprayed 19 times with toxaphene, and this spraying kept boll weevil infestation below 4% most of the time. At one time this infestation went up to 18% but it was still far below the county average, which was about 50% infestation in August.

Mr. Williams said the important thing is to follow a regular schedule of dusting. He pointed out that the average farmer dusts periodically without a definite plan.

This farmer has made weekly checks of the cotton square for boll weevil infestation to determine the amount of spraying. He also said he used a little more fertilizer with an increase in nitrogen.

Mr. Nix said the first four sprayings Mr. Williams put out cost less than \$1 an acre, and were very important in boosting the cotton growth. They also were important in controlling thrips.

Mr. Williams put out a total of 900 lb. of 5-10-15 fertilizer per acre on the 25 acres. He broadcast 500 lb. per acre with a lime spreader, and put the other 400 lb. in the row. Five weeks later, he side-dressed the cotton with 300 lb. of ammonium nitrate (granular).

The cotton demonstration program is one of eight being sponsored throughout Georgia under direction of the extension service.

The amount of spray material applied to an acre of tomatoes for control of late blight and anthracnose is not important provided the fungicide dosage per acre is constant and in sufficient amount to meet spray recommendations, say Cornell plant disease specialists at the experiment station at Geneva.

Results of four years of field testing various types of spray equipment which applied from 20 to 200 gal. of spray mixture per acre to tomatoes under disease conditions ranging from mild to severe are recorded by the Cornell workers in a recent issue of the "Plant Disease Reporter."

"The acceptance of a tomato spray

program by growers and processors in New York state following disastrous late blight epidemics in 1946 and 1947 has led to questions concerning the best methods of applying fungicides to tomatoes," comment the scientists. Chiefly, the growers want to know what concentrations of fungicides to use, the necessary gallonage, and the suitability of various types of spray equipment for the job.

Using disease control data and measuring the deposition and distribution of the fungicide by what they call "leaf prints," the Cornell workers report that "gallonage is not necessarily the main determinant of a good tomato fungicide schedule, providing the fungicide dosage per acre-application is constant. This does not mean a blanket endorsement of any or all types of spray concentrate machinery for tomatoes, but it does indicate that the principle of concentrate application is sound. The greatest deterrent to their successful use would be a tendency of growers to over-extend the limits of coverage of a particular applicator."

Leaf prints which give a pattern of the spray deposit on specially treated paper provide a useful method for measuring the limits of a particular type of spray equipment under a wide range of conditions, especially wind velocity in a given area, it is explained.

Chase Bag Appoints Advertising Agency

NEW YORK—Chase Bag Co. has appointed Hazard Advertising Co., Inc., as its advertising agency effective Nov. 1, announced Alden W. Clark, advertising manager.

Hazard will handle all advertising activity as well as public relations for the new client. Richard LaBarre will function as advertising account executive, James R. Thompson as public relations account executive.

PLACEMENT

(Continued from page 7)

of phosphates would appear to be particularly important for seedlings made during periods of low temperatures or for crops that make most of their growth during cold weather. In California we have demonstrated many times the importance of an available supply of phosphorus for our winter and early spring crops, such as cabbage and direct-seeded tomatoes.

Another interesting relationship has been demonstrated between the placement of fertilizer and the water solubility of phosphorus. In general, water solubility assumes greater importance in row or localized placement than from broadcasting or less localized placement. This means that when the fertilizers are banded there has been maximum differences between water soluble and water insoluble forms of phosphorus, but when broadcasted and thoroughly mixed with the soil the differences between the two sources of phosphorus are less. Recommendations from some Western states state that fertilizers containing water insoluble phosphorus should be thoroughly mixed with the soil rather than be banded.

Soil Test Program

ITHACA, N.Y.—A program to introduce more Chautauqua County farmers to the advantages of soil testing will be launched by Roger Cramer, Chautauqua County agent, and the New York State College of Agriculture, Cornell University.

Inaugurating the two-month campaign, in which farmers will be urged to obtain soil samples for testing, will be representatives of farm organizations, banking cooperatives, farm service organizations, Cornell University, and the press and radio.

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Weather Modification in North America

SCIENTISTS in both the U.S. and Canada continue to emphasize the meagerness of our present knowledge of the physics of rain-clouds, that is the processes in the clouds that lead to rain. They advise that many complex processes must be investigated to gain the scientific knowledge needed before predictable results are possible in a weather control program. However, cloud seeding experiments made in various parts of the North American continent during the past 10 years have, in some cases, been carefully evaluated and some of the conclusions reached are summarized here.

Cloud Seeding

In Canada, the skies over the provinces of Quebec and British Columbia were the first to receive cloud seeding tests—in both cases, it should be noted, with a view to increasing water power.

Seeding operations in certain Quebec areas in 1951 and 1952 were analyzed by the Meteorological Division, Department of Transport, employing statistical techniques to estimate the results of these operations. The results were published in September, 1954, and they indicated deficits in rainfall in five of the six seeded months in one target area and no significant effect in the other area.

Commercial cloud seeding was carried out in British Columbia by two contracting firms over the years 1952 to 1956. Target areas were on the mainland and on Vancouver Island. The British Columbia Research Council was given the responsibility for an extensive study of weather modification operations in that province and for producing a comprehensive report evaluating the cloud seeding experiments. Three of the seeding projects were aimed at increasing water supply for hydro-electric use and a fourth was intended as a measure against fire hazard.

The interim report of the council covering phase 1 of its evaluation program, issued Jan. 25, 1957, summarized results as follows: "The reports prepared by the contractors on their cloud seeding operations in British Columbia claim appreciable increases in rainfall in all target areas during the seeding operations. The present report does not support this view. A check of the procedures used in estimating the increases in rainfall has shown that the calculations used in the reports are faulty and that no change in rainfall as a result of seeding has been found in any area." The final project report was issued Aug. 7, 1957, and the summary of results states:

"Examination of one additional contractor's report not included in the first phase of this study yielded conclusions similar to those reported previously. No change in rainfall as a result of seeding has been proved. Application of methods used by the contractors shows that the effects of seeding, if any, are small and undetectable." Evaluation by more detailed and advanced statistical methods showed that the over-all effect had been to increase precipitation but also indicated that the probability that this increase would be as much as 10% was extremely small. The effect of seeding in the individual Powell Lake and Campbell River water sheds was the same. As will be noted later, this evaluation for West Coast areas

in Canada was somewhat less optimistic than the evaluations of West Coast U.S. areas reported in the technical report of the U.S. Advisory Committee on Weather Control.

A further observation on cloud seeding in British Columbia has been made by Dr. W. L. Godson, superintendent of the Atmospheric Research Station of the Meteorological Service of Canada, who suggests that the usefulness of cloud seeding in augmenting precipitation in that province is considerably less controversial than it is in Eastern Canada. It is generally agreed, he adds, that winter precipitation in mountain areas can be increased by skilful seeding operations with ground generators on the windward side of the mountain ranges in non-frontal situations. He also advised that the situation is less clear cut in summer situations on the West Coast and in the interior valleys of British Columbia.

In 1953, cloud seeding operations were carried out for an area of approximately 500 sq. miles in southwestern Manitoba, as a result of a contractual arrangement between farmers in that area and the Water Resources Development Corporation of Denver, Colo. In 1954, operations were again carried out for this area and for two areas in west-central Saskatchewan. The purpose of these operations was to increase rainfall in specified target areas.

Impartial Assessment of Operation

The Meteorological Division of the Department of Transport was asked to provide an impartial assessment of the effects of these cloud seeding operations and a detailed report of the findings was published. Basically the procedure consisted of comparing rainfall within a seeded area (the target area) with rainfall in nearby unseeded areas (the control area). The normal relationship between rainfall in the seeded and the unseeded areas was first established as closely as possible, using a 30-year period of records for the Saskatchewan project and a 40-year period for the Manitoba project. These periods were selected since they covered the period for which a continuous record of rainfall data was available from a suitable network of official observing stations in all areas. Using official records of rainfall in the unseeded areas for the months in 1953 and 1954 when seeding operations were in progress, values of the monthly rainfall in each seeded area were calculated. These computed amounts were then compared with the actual rainfall in the seeded areas. Any differences in amounts were taken as reflecting the probable effect of the cloud seeding operations.

Unfortunately it was not possible to separate out the errors arising from the use of an approximate calculation formula which gives simply a "statistical" estimate of rainfall in a target area using rainfall amounts as recorded in a control area some distance away. In this connection, farmers will realize that because of the often large differences in rainfall at places not far apart, rainfall records for a month or for a particular storm, obtained from a "control" area, may not always be safely relied upon to give a satisfactory estimate of amounts at another "target" area using a formula based on rain-

fall records for past years. It is because of the inability to forecast rainfall accurately and the difficulties in estimating the rainfall that would have fallen "without" cloud seeding, that it has been impossible, despite many years of seeding, to arrive at a definite answer on the value of the seeding operations.

All statistical techniques used in the Manitoba and Saskatchewan study were thoroughly tested and found satisfactory. Results of the evaluation were as follows: Evaluation of the nine seeded months indicated that the most likely effect of the seeding was a decrease in rainfall of 14.1%. The odds were 19 to 1 that the effect of cloud seeding lay between the decreases of .2 and 24.6%. Moreover, the odds were 31 to 9 against the hypothesis that seeding increases rainfall. It was possible to demonstrate in a general way from the results that there had been no significant differences of seeding effect between different areas, months or years.

The Meteorological Division pointed out that these figures, although they provided significant evidence, were not necessarily the final answer. An evaluation covering a longer period of operations might increase or decrease the value given for the most likely effect of cloud seeding and would certainly increase the reliability of the results. However, the tests provided what seemed to be conclusive evidence that cloud seeding of the type performed, using ground based generators emitting silver iodide particles, did not increase rainfall from the type of storms which provide most of the rain on the prairies during May, June and July.

An answer to this controversial question can only come from an adequate knowledge of the physics of rain clouds and from very carefully designed and controlled cloud seeding experiments in which the critical factors and the atmospheric conditions are known. From these will come a reliable opinion on the predictable effects of cloud seeding under particular conditions. In Canada, a large scale program of cooperative research on cloud physics, in which the Meteorological Service, the National Research Council, the Alberta Research Council and the Stormy Weather Research Group of McGill University are cooperating, is aimed at gaining the necessary knowledge. In addition, a program of carefully controlled field tests will shortly be undertaken in order to obtain as reliable an estimate as possible of the effects of cloud seeding based on present scientific knowledge.

Evidence of Experiments Made in the U.S.

A general reference has already been made to the numerous experiments in cloud seeding which have been carried on in various parts of the U.S. during the past decade. Most of the results of these experiments were reported in 1957. They include the final report of the Advisory Committee on Weather Control established by Congress in August, 1953, and a statement by the American Meteorological Society. Some of the main findings of these bodies will appear later. First, however, some reference should be made to the classes

EDITOR'S NOTE

THE information contained in this weather article has been assembled by the Searle Grain Co., Ltd., from various sources in an attempt to answer some of the questions that have been raised about the important but still very controversial subject, "Weather Modification." It is based chiefly upon U.S. and Canadian scientific and official reports and statements, the latter having been made available by the Meteorological Branch, Department of Transport, Toronto, to whom grateful acknowledgement is made for the information supplied and assistance given. Parts 1 and 2 of this series appeared in the Aug. 24 issue of Croplife.

of project undertaken in the U.S. by the advisory committee, as well as to the nature and scope of the experiments conducted by this body.

For its evaluations, the advisory committee had available a larger and more varied collection of information on cloud seeding operations than ever previously assembled. Twelve commercial cloud seeding projects were selected. These projects involved a total of 427 storms seeded for the purpose of increasing rainfall. These seeded storms were analyzed for seeding effect on the basis of measured rainfall of 5,516 unseeded storms which occurred at the project sites during previous years, some going back a quarter of a century. With the exception of one project, all operations evaluated took place during the fall, winter and spring months.

As pointed out in the committee's report, there are two primary considerations to be taken into account in estimating the potential effects of seeding storm clouds: (1) the existence of suitable air currents to transport the artificial nuclei from the ground up to the portions of the cloud system where the precipitation is formed; (2) the relative effectiveness of the natural nuclei within the range of temperatures found at these altitudes.

Because the potential effectiveness of cloud seeding is greatly influenced by the presence or absence of mountain ranges, the committee divided the projects into three classes: (1) "Orographic" or mountainous class, which refers to mountainous areas in which land barriers stand in the path of moisture laden air, thus forcing the air to rise and hence cooling it. Mountainous areas are ideal for cloud seeding because the up-drafts created when air flows up and over the mountains help to lift the artificial nuclei to effective height, (2) semi-mountainous class. This includes less mountainous areas where the land barriers are less useful in aiding the transport of artificial nuclei aloft and (3) non-mountainous class. This includes areas where land barriers do not exist, or if they do, they cannot

be reasonably expected to aid in lifting the artificial nuclei aloft.

Brief reference only can be made to some of the more important projects.

Project Overseed: Set up by the committee near Mount Washington, N.H., to duplicate the commercial seeding techniques used for winter storms in mountains and to determine if the silver iodide particles actually reached the clouds in significant amounts. The term "overseed" was used because of the emphasis on trying to produce dramatic or easily recognizable effects by using more than enough silver iodide.

Project Sailplane: A study initiated to check the motion of silver iodide particles and their de-activation under warm summer conditions. The silver iodide was released on the ground and hunted with equipment mounted in a sailplane. This method of tracing silver iodide by sailplane worked well but light aircraft were used on practically all the later field projects for the advisory committee.

Project Skyfire Arizona (1956): A long range objective of this project was to study the feasibility of reducing forest fires by damping out cloud-to-ground lightning through the use of cloud modification techniques.

Project Sea Breeze: An evaluation study conducted in Florida, the objective being to take advantage of the seeding evaluation possibilities of the thunderstorms which arise regularly a few miles inland from the ocean. The studies resulted in the development of a theory of cumulus cloud precipitation which proved to be increasingly important in understanding the behavior of convective clouds.

Project Skyfire Montana (1957): The major effort was concentrated on the seeding of mountain cumulus clouds from a battery of 30 ground based silver iodide generators situated on the Montana-Idaho border. The aim of the project was to make a major seeding effort with the hope of achieving large scale changes in the clouds.

Atlanta Project: A study established by an Atlanta research group to investigate effectiveness of cloud seeding from ground based generators in the flat land of Texas, Oklahoma, Nebraska, Missouri and Iowa. This study was prompted by previous failure to demonstrate significant and statistical co-relation between target areas and control areas in the flat land region.

South Dakota Project: Unlike the others, this was a summertime operation. It involved the seeding effect of 41 seeded storms and, of course, was in the non-mountainous class. In this particular farming area, as in a great many areas in Western Canada, any increase in rainfall would have been worthwhile compared to the cost of seeding programs and the potential benefit would be high even for slight increases in rainfall. Statistical evaluation methods were used but there were no clear cut conclusions.

Summary of Findings By Advisory Committee

A. On the basis of its statistical evaluation of winter-time cloud seeding, using silver iodide as the seeding agent, the committee concluded that:

1. The statistical procedures employed indicated that the seeding of winter-type storm clouds in mountainous areas, in the western U.S., produced an average increase in precipitation of 10% to 15% from seeded storms, with heavy odds that this increase was not the result of natural variation in the amount of rainfall.

2. In non-mountainous areas, the same statistical procedures did not detect any increase in precipitation that could be attributed to cloud seeding. This does not mean that effects might not have been produced. The greater variability of rainfall patterns in non-mountainous areas made the techniques less sensitive for picking up small changes which might have occurred there than when

applied to the mountainous regions.

3. No evidence was found in the evaluation of any project which was intended to increase precipitation that cloud seeding had produced a detectable negative effect on precipitation.

B. On the basis of its physical evaluation, the committee concluded:

1. The conventional seeding with silver iodide generators on the ground is a valid technique for producing ice crystals in favorable summer and winter storm situations. (Formation of ice crystals is thought to be essential for the initiating of precipitation from most cold clouds. However, it is relevant to observe that precipitation does not necessarily follow.)

2. Measurements and cloud observations in various regions throughout the U.S. have indicated that sometimes there is a deficiency of natural ice forming particles effective at the temperatures at which ice crystals

are formed on silver iodide.

Note: There is no evidence that ice crystals are required for summer storm situations even as far north as Canada.

The advisory committee concluded that the projects, briefly reported in the foregoing summary, yielded information of basic importance to atmospheric physics. It emphasized, however, that much more work in this direction needed to be done. The results obtained emphasize the meagerness of our present knowledge, and point toward a long-range program of basic research which would assure more rapid progress in atmospheric physics and chemistry. This, the report stressed, could be accomplished only by dedicated able scientists free to move in whatever direction their enthusiasm and curiosity took them. Few areas of science, it was felt, had implications so profound to all mankind as the study of the atmosphere and the phenomena which occur in it.

Senate Yields to New

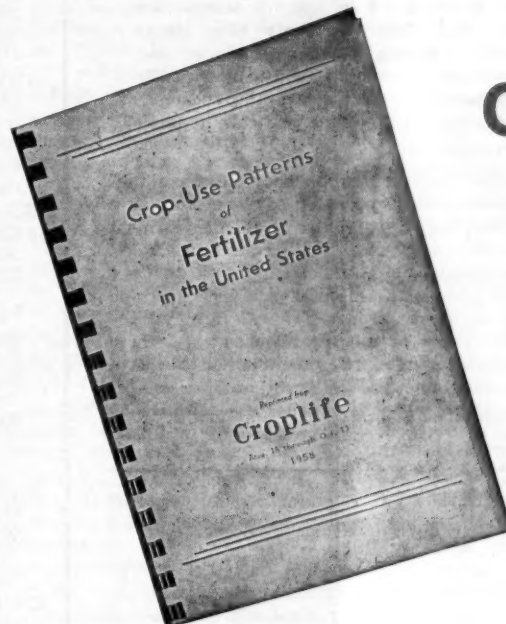
Ceiling on Wildlife Study

WASHINGTON—A ceiling of \$2,565,000 on the amount of funds to be made available yearly for a study on the effects of insecticides on wildlife, has been set by the Senate. The study is being conducted by the Department of the Interior, Fish and Wildlife Service.

Under laws now in effect, funds allocated for this purpose are only \$280,000 a year. (Croplife, Sept. 14, page 1) The Department of Commerce had asked that the ceiling be lifted completely, but the House had persisted in its desire that a limit be set for this activity.

The Senate, on the other hand, had been inclined to grant the "no ceiling" request, but finally yielded to the House. The bill (S. 1575) last week was awaiting the President's signature to make it law.

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A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

Better Farming Methods? . . .

Trend Away from 'Family Farms' May Add Impetus to Sale of Pesticides, Fertilizer

JUST RAISE the question whether the family farm is disappearing from the American scene, and eight times out of ten, you'll have a discussion going. Statistics show the trend toward incorporated farms, and this, say many family farm enthusiasts, marks the demise of a great institution.

But does it? Incorporating the family farm is becoming popular in many areas as an efficient manner to gain possible operating advantages and to simplify dividing ownership among members of the family.

Family farmers have seen certain financial advantages in turning their operations into a corporation, and appear to be moving more and more in that direction. But mere incorporation does not necessarily end the family farm concept. The same people continue to own and operate the farm for, in corporations of this type, various members of the family are stockholders, members of the board of directors, officers and employees.

A considerable number of farmers and ranchers in Oregon have incorporated, according to Grant Blanch, Oregon State College economist, who reports that more than 100 farms in the state have thus changed their setup. "The trend is increasing," says Mr. Blanch, "for nearly 25% of these incorporated farm-ranch businesses were formed during the past 2½ years."

Mr. Blanch tells farmers that incorporating is often practical when they own considerable amounts of property not directly part of the farm or ranch. Also, he says, the operation need not be a big one to make incorporation a good idea. Of

the Oregon farms incorporated, some 28% had authorized capital stock of \$10,000 or less and 21% from \$10,000 to \$25,000. About a third of the incorporated farm-ranch operations were capitalized at \$100,000 or more.

The significance of all this to the fertilizer and pesticide trades lies in the answer to this question: Will an incorporated farm or ranch become a better customer for plant food and insecticides, fungicides, rodenticides, and weed killers?

We are inclined to answer affirmatively. Operators alert enough and forward-looking enough to investigate the benefits of incorporating are likely to be the kind of farmers and ranchers who would appreciate and use these chemical aids to their fullest extent.

They should be the type of people who read college bulletins, study farm paper articles on more efficient management, and are willing to listen to good selling points by salesmen who can prove the economic benefits of fertilizer and pesticide applications.

Whether incorporated or not, the farm unit must be operated at top notch efficiency to assure its owners a respectable return on their investment in land, machinery, seed, fertilizer and pesticides.

Thus, many in the trade tend to shrug their shoulders when heated discussions arise concerning the relative merits of the "family" farm vs. the "business" farm. As nearly as we can see, there is no significant difference unless, when run as a profit-making enterprise rather than as a way of life, the operators make broader use of chemical tools for better production at minimum unit cost.

Nitrogen Distributor Described

DISTRIBUTORS OF anhydrous ammonia may get a chuckle out of the manner in which S. C. Smith, Uvalde, Texas, president of the Agricultural Ammonia Institute, described himself before a recent nitrogen conference in Minnesota:

"I am a distributor of anhydrous ammonia and other agricultural products . . . I am the 'small businessman' about whom politicians talk and for whom they do nothing. I am the man to whom farmers look when they need goods for production, and I am the first man about whom they think when the cost-price squeeze starts squeezing. I am the middle man, so to speak, between the ammonia producer on the one hand and the farmer on the other."

This declaration should ring a familiar note to many of Mr. Smith's counterparts in all parts of the country. Possibly some of them might add a few additional remarks regarding the business.

Special Tax on Fertilizer?

SUGGESTIONS on how to solve the so-called "farm problem" have been numerous over the past few years; some ideas being worthy of consideration, and others considerably on the doubtful side.

In the latter category must be placed a recent suggestion, apparently made in all seriousness, that a high tax should be imposed on commercial fertilizers. The author's reasoning, apparently, runs in this manner:

Farm prices are low because of surplus production. Excessive production in turn comes from fertilizer use. Therefore, if fertilizer should be made

more costly via a stiff sales tax, its use would be reduced and the surplus problem would be ended forthwith. Simple, isn't it?

We can just visualize hundreds of fertilizer manufacturers, distributors and others in the trade rising to remind the author of the above suggestion that the price of fertilizers could well be upped, but without the addition of taxes.

As soon as the farmer becomes well aware of the dollars-and-cents value he receives from the application of fertilizers, he could easily spend more for plant food and still come out with a surprisingly large profit.

Naturally, both he and the fertilizer industry would protest loudly if a discriminatory tax of this type were imposed. The point is that fertilizers are worth more than the farmer pays . . . but any additional cost should be in the form of revenue to the supplier to assure needed additional services.

Keep Up Research

THE STATEMENT has been made that we are already producing too much food. We are only producing more food than we know how to use . . . It is true that we have food products stored in warehouses, products that probably won't be used. But as long as millions of people go to bed hungry at night, we can't say there is an excess of food.

"We hear people in one breath talking about the necessity for limiting the world's population because of food shortage; and in the next, talking about limiting research that would increase the food supply. The world would indeed be in a sorry state if we would ever have to inhibit progress in any one field of knowledge simply because another field has lagged behind."—Dr. T. P. Carney, Eli Lilly & Co.



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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$6 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG

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Associated Publications—The Northwestern Miller, The American Baker, Farm Store Merchandising, Feedstuffs, Milling Production.



1960

June 13-18—National Plant Food Institute annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

Meeting Memos listed above are being listed in this department this week for the first time.

Oct. 21-23 — National Agricultural Chemicals Assn., 26th annual meeting, French Lick-Sheraton Hotel, French Lick, Ind., Lea S. Hitchner, executive secretary.

Dec. 9-11—International Crop Protec-

19450

July 13-15—Eleventh Annual Fertilizer Conference of the Pacific

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CALENDAR FOR 1959-60

SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
														1	2	3	4	5	6	7							
6	7	8	9	10	11	12	13	14	15	16	17	18	19	18	9	10	11	12	13	14	6	7	8	9	10	11	12
13	14	15	16	17	18	19	11	12	13	14	15	16	17	22	23	24	25	26	27	28	13	14	15	16	17	18	19
20	21	22	23	24	25	26	18	19	20	21	22	23	24	29	30						20	21	22	23	24	25	26
27	28	29	30				25	26	27	28	29	30	31	29	30						27	28	29	30	31		

JANUARY							FEBRUARY							MARCH							APRIL						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
						1			1	2	3	4	5				1	2	3	4	5						
3	4	5	6	7	8	9	7	8	9	10	11	12	13	6	7	8	9	10	11	12	3	4	5	6	7	8	9
10	11	12	13	14	15	16	14	15	16	17	18	19	20	13	14	15	16	17	18	19	10	11	12	13	14	15	16
17	18	19	20	21	22	23	21	22	23	24	25	26	27	20	21	22	23	24	25	26	17	18	19	20	21	22	23
24	25	26	27	28	29	30	28	29						27	28	29	30	31			24	25	26	27	28	29	30

MAY							JUNE							JULY							AUGUST						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9	7	8	9	10	11	12	13
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22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23	21	22	23	24	25	26	27
29	30	31					26	27	28	29	30			24	25	26	27	28	29	30	28	29	30	31			

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